Clarion

2008 Clarion Application Guide

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Guide Overview

Welcome To Clarion!

This Sales and Application Guide provides you with all the information necessary to sell and install the entire Clarion product line. Clarion has been a driving force in the mobile electronics industry for over 50 years. At Clarion, research and development has always played a key role decade after decade. Our worldwide engineering team is responsible for many technological innovations that have influenced the entire car audio industry. Clarion products are designed to satisfy not only the casual listener, but the discerning audiophile as well.

As part of the Clarion dealer network, you are able to offer your customers car audio components unparalleled in quality and value. We not only provide the right products, but also the necessary support services.

Clarion Corporation of America Dealer Tech Hotline
800-733-3336

Clarion Canada Inc. Dealer Tech Hotline
905-829-4600
800-668-5612

The Dealer Technical Hotline is available to all authorized Clarion dealers for installation and technical questions. It is manned by Clarion experts from 8:30 AM to 5:00 PM EST, Monday through Friday. A voice mail system is available to leave a message during non-business hours and weekends.

Online Wiring, Owners and Installation Manuals and Product Information

www.teamclarion.com

Wiring diagrams are available 24 hours a day, seven days a week from the www.teamclarion.com web site. Also available online are owner's manuals, FAQs, product images, display board tags, and online order entry.

CONTENT AND ACCURACY

Clarion makes every effort to ensure the accuracy and detail of the information contained within this Product Application Guide.

However, due to continuous improvements and availability of information, the content of this document may need to be updated throughout the year. The most recent and accurate version of the binder can always be found online at www.teamclarion.com.

Quality Control

Clarion products have long been recognized as being extremely reliable. Quality control is an essential ingredient for reliability. During manufacturing, products are tested at every stage – from first prototype, through various stages of production, to the finished product. They are subjected to a battery of tests ranging from vibration, shock, temperature fluctuation, moisture, and other elements. Clarion's attention to quality control has earned an ISO 9002 Certification, the highest in the industry.

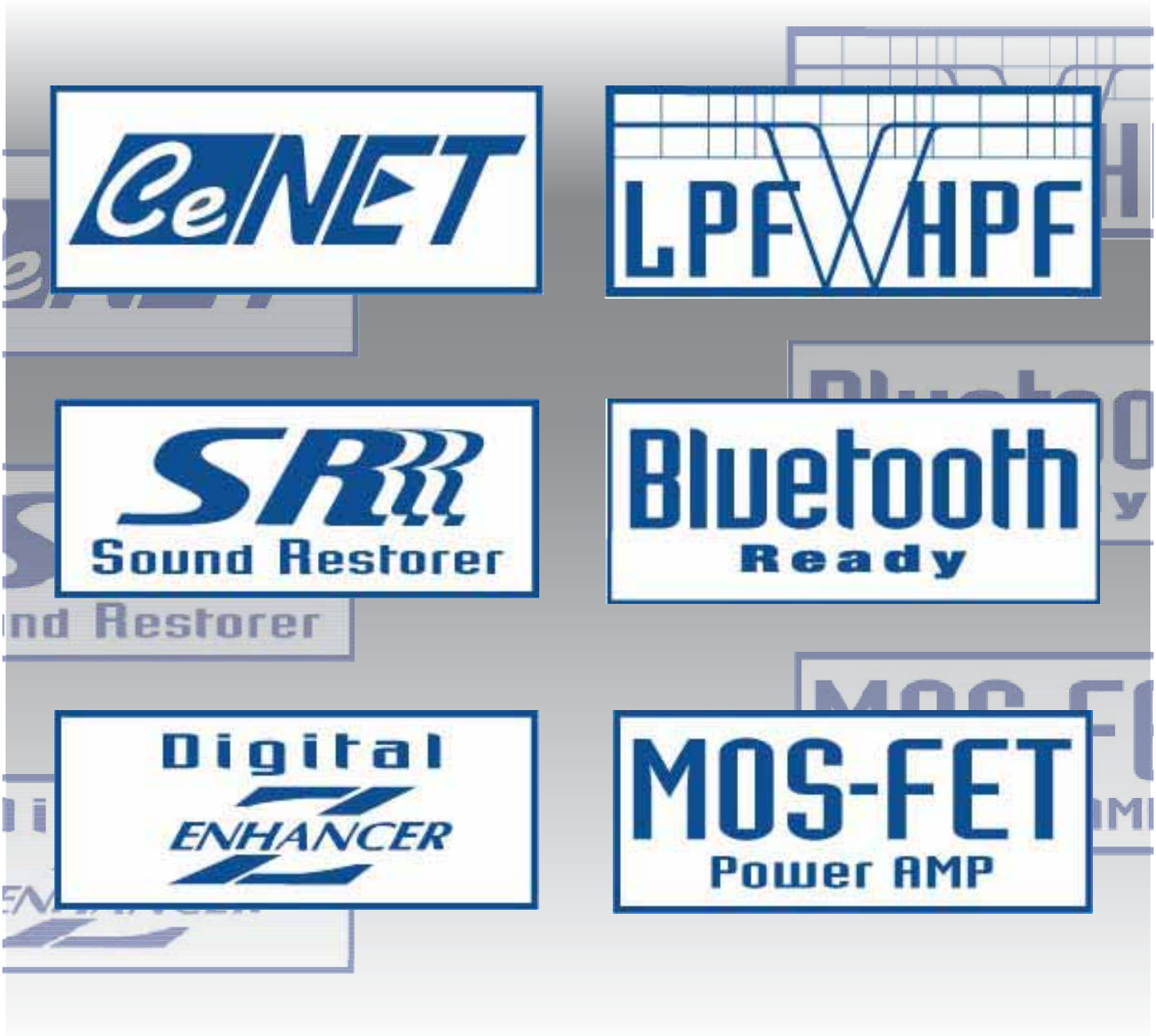
Research And Development

Clarion has maintained a strong research and development program ever since the company's founding in 1947. By keeping ahead of the industry with new innovations, Clarion has been able to offer "leading edge" products for discerning audiophiles the world over. Clarion maintains research facilities around the world. Three main laboratories in Japan include product development, product engineering, and semi-conductor research. In the United States, Clarion has a Technical Support Service Center, as well as the North American Product Planning Department, based at the Cypress (California) Corporate Office Complex. The staff of engineers in Cypress work closely with engineers in Japan for product development in both OEM and aftermarket products.

Clarion Firsts in the Industry

- First car radio in Japan (Model A-214 – 1948)
- First audio equipment supplier to Japanese auto maker (Renault Motor Co. - 1953)
- First fully-transistorized car radio in the world (1959)
- First car stereo set in Japan (CA-802 – 1963)
- First cassette car stereo set in Japan (PE-801 – 1968)
- First auto-reverse car cassette player in the world (PE-666 – 1971)
- First car radio FM impulse noise suppressor in Japan (CZ1 – 1978)
- First car graphic equalizer booster in the world (EQB – 1978)
- First AM noise-suppressing IC in the world (CZ2 – 1979)
- First motorcycle radio set in the world (Honda Motor – 1980)
- First DAT player for the car in the world (DAC2000 – 1984)
- First combination AM/FM, CD changer-controller, and cellular telephone to operate by voice recognition (CAL-1000 – 1992)
- First active digital control system (ADCS-1 – 1993)
- First car multimedia system (TTX7101/VMA9181 – 1995)
- First in-car computer/audio system (Clarion Auto-PC – 1998)
- First in-dash integrated multi-zone DVD/MP3/CD/Tuner/Navigation system (Clarion Joyride – 2002)
- First half-DIN in-dash powered center-channel speaker (SRK5 – 2003)
- First static memory, in-dash digital recorder (DXZ845MC Music Catcher System – 2003)
- First Fully transportable Navigation and Entertainment system (NICE - 2005)

Audio Technologies



iPod Connectivity

In 2005, Clarion established a new benchmark in Apple iPod connectivity with the release of the VRX755VD and CCA649 (iPod audio control interface cable). This revolutionary multimedia source unit provided seamless operation and control of the iPod with GUI (graphical user interface) controls similar to those found on the iPod. Not only did it control iPod while connected, but it also recharged the internal battery of the iPod. For those with a conventional CeNET source unit, Clarion offered the EA1251B (CeNET black box interface). This black box iPod interface allowed iPod users to connect their iPod to CeNET source units manufactured as far back to 2001. It essentially converted the iPod into an electronic CD changer, as it required the creation of "Clarion" playlists. Unlike a typical CD with an average of 14 songs, each "Clarion" playlist was capable of storing up to 99 songs. Thus eliminating scratched discs and trying to find the appropriate jewel case.

In 2006, Clarion introduced the VRX765VD and MAX675VD multimedia command stations to the market place. Coincidentally, it corresponded to the release of the Apple iPod capable of video playback. Like it predecessor the CCA649, the newly released CCA673 (iPod audio control / video playback interface cable) not only provided iPod audio control, but video playback as well.

Multimedia stations weren't the only category to receive an iPod connectivity makeover. CeNET source units, including CeNET marine source units, took advantage of the new iPod interface that didn't require special playlists and offered song selection sorted by song title, album, artist, composer, genre, or playlist. The EA1276B (CeNET iPod black box interface) provided the iPod integration people had longed for.

In 2007, the continued growth of the multimedia category brought forth the release of two additional multimedia control stations and the introduction of two additional iPod interfaces. New for 2007 were the VRX775VD and VRX575USB with the MAX675VD carrying over from the previous model year. The VRX775VD and MAX675VD utilized the CCA673, while the VRX575USB uses the CCA691 (iPod audio control / video playback interface cable). These combinations of products provided audio iPod control and video playback without compromising sound quality and ease of use.

Since technology never stands still, the EA1276B was replaced with the CCAIPOD (CeNET iPod interface). Although they both offered the same iPod audio playback and song selection, the differences were evident in their size and ease of installation. No longer was it necessary to find a place for a bulky black box.

A major turning point in iPod connectivity came about in 2008. With a complete new line-up of multimedia and CD source units. With Clarion's dominating presence in the multimedia category, six new multimedia stations were introduced two of which are iPod direct connect. But the innovations didn't stop there; as four new CD source units were introduced offering USB iPod direct connect as well. USB iPod direct connect allows iPod owners to connect their iPod with a standard USB to iPod connector cable. The cable typically included with the purchase of an iPod.

For the extremist, the VRX785BT and MAX685BT offer both USB iPod direct connect for audio control or audio control and video playback with the CCA723 (iPod audio control / video playback interface cable). With their advanced features and navigation capabilities, it is understandable why these units are desired amongst the extremists.

The VRX585USB and VRX385USB offer audio control and video playback when interfaced with CCA691 cable. Whether scrolling through thousand of songs or video files, nothing else

is required other than a fingertip.

Rounding up the new 2008 multimedia category are the VRX485VD and MAX385VD. These multimedia control stations offer iPod audio control and video playback when interfaced with the CCUIPOD1 (iPod audio control / video playback interface cable). An evident sign of Clarion quality can be observed by the exceptional audio/video playback and ease of operation.

USB iPod direct connect also took center stage when it came to CD source units with four of them with USB iPod direct connectivity. No black box or interface cable required!

Virtually from the beginning of the Apple iPod reign, Clarion was at the forefront of iPod connectivity. By offering consumers GUI's mimicking those commonly found on their iPod on multimedia command stations with high speed song and playlist search capabilities. And the ability to utilize their existing Clarion CD source units dating back as far as 2001 with their iPod.

Apple iPod Interfaces

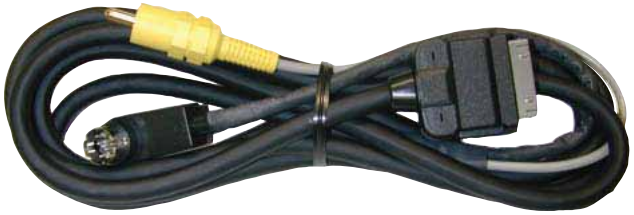
EA1251B (CeNET Black Box iPod Interface)
- Compatible with 2001-2006 CeNET Source Units
- Simulates the iPod as a 6-Disc CeNET CD changer
- Requires "Clarion" playlists to be created.
- Some source units with CD-Text function have the capability to show ID3 TAG information.
- Charges the iPod battery.

EA1276B (CeNET Black Box iPod Interface)
- Compatible with 2007-up CeNET Source Unit
- Compatible with Marine source units: M455A, M475, CMD4A, CMD5
- Category direct access: Playlist, Artist, Album, Song, Genre, Composer
- Some source units with CD-Text function have the capability to show ID3 TAG information.
- Charges the iPod battery.
- Replaced by the CCAIPOD

CCAIPOD (Advanced CeNET iPod Interface)
- Compatible with 2007-up CeNET Source Unit
- Compatible with Marine source units: M455A, M475, CMD4A, CMD5
- Category direct access: Playlist, Artist, Album, Song, Genre, Composer
- Some source units with CD-Text function have the capability to show ID3 TAG information.
- Charges the iPod battery.

CCA673 (iPod Audio Control / Video Playback Interface Cable)

- Audio control and video playback with: VRX765VD, VRX775VD, MAX675VD, MAX675VDII
- Audio control only with: VRX755VD
- iPod GUI (graphical user interface) on-screen display
- On-screen display of: Podcast titles, Artist names, Album titles, Song titles, Genre names, Playlist titles, Composer names
- Touch-screen direct category access to: Playlist, Artist, Album, Song, Genre, Composer
- Video playback with compatible Apple iPods
- Charges the iPod battery.



CCA691 (iPod Audio Control / Video Playback Interface Cable)

- Audio control and video playback with: VRX385VD, VRX575USB, VRX585USB
- On-screen display of: Podcast titles, Artist names, Album titles, Song titles, Genre names, Playlist titles, Composer names
- Touch-screen direct category access to: Playlist, Artist, Album, Song, Genre, Composer
- Video playback with compatible Apple iPods
- Charges the iPod battery.

CCA723 (iPod Audio Control / Video Playback Interface Cable)

- Audio control and video playback with: VRX785BT, MAX685BT
- iPod GUI (graphical user interface) on-screen display
- On-screen display of: Podcast titles, Artist names, Album titles, Song titles, Genre names, Playlist titles, Composer names
- Touch-screen direct category access to: Playlist, Artist, Album, Song, Genre, Composer
- Video playback with compatible Apple iPods
- Charges the iPod battery.

CCUIPOD1 (iPod Audio Control / Video Playback Interface Cable)

- Audio control and video playback with: VRX485VD, MAX385VD
- On-screen display of: Podcast titles, Artist names, Album titles, Song titles, Genre names, Playlist titles, Composer names
- Touch-screen direct category access to: Playlist, Artist, Album, Song, Genre, Composer
- Video playback with compatible Apple iPods
- Charges the iPod battery.

Audio Technologies - iPod Compatability Chart

		iPod						
		1Gen	2Gen	3Gen	4Gen	4GenPhoto	5Gen Video	6Gen Classic
Double Din Multimedia	MAX685BT	(21)	(21)	(21)	(21)	(21)	- iPod Cable - CCA723 (5,8,9,10,13)	(5,8,9,10,13,20) iPod Cable
	MAX385VD	(21)	(21)	(21)	(21)	(21)	- CCUIPOD1 - CCUIPOD1 (13)	(13, 20) CCUIPOD1
Single Din Multimedia	VRX785BT	(21)	(21)	(21)	(21)	(21)	- iPod Cable - CCA723 (5,8,9,10,13)	(5,8,9,10,13,20) iPod Cable
	VRX585USB	(21)	(21)	(21)	(21)	(21)	- CCA691 - CCA691 (9, 13, 17)	(2,9,13,17,20) CCA691
	VRX485VD	(21)	(21)	(21)	(21)	(21)	- CCUIPOD1 - CCUIPOD1 (13)	(13, 20) CCUIPOD1
	VRX385USB	(21)	(21)	(21)	(21)	(21)	- CCA691 - CCA691 (9, 13, 17)	(2,9,13,17,20) CCA691
Mech-less	FB275BT/ FB275BTB	(21)	(21)	(21)	(21)	(21)	(21)	(21)
Double Din Source Units	DUZ385SAT	(22)	(22)	(22)	(22)	(22)	(2) iPod Cable	(1,2) iPod Cable
	UDB275MP	(22)	(22)	(22)	(22)	(22)	(22)	(22)
	DFZ675MC	(22)	(22)	(22)	CCAIPOD	(2) CCAIPOD	(2) CCAIPOD	(1,2) CCAIPOD
Single Din Source Units	DRZ9255	(21)	(21)	(21)	EA1251B	EA1251B	EA1251B	EA1251B
	DXZ785USB	(21)	(21)	(21)	EA1251B	EA1251B	(2) iPod Cable	(1,2) iPod Cable
	DXZ585USB	(21)	(21)	(21)	EA1251B	EA1251B	(2) iPod Cable	(1,2) iPod Cable
	DXZ385USB	(22)	(22)	(22)	EA1251B	EA1251B	(2) iPod Cable	(1,2) iPod Cable
	DB285USB	(22)	(22)	(22)	(22)	(22)	(22)	(22)
	DB185MP	(22)	(22)	(22)	(22)	(22)	(22)	(22)
Marine Source Units	CMD5	(21)	(21)	(21)	(2) CCAIPOD	(2) CCAIPOD	(2) CCAIPOD	(2) CCAIPOD
	M475	(22)	(22)	(22)	(2) CCAIPOD	(2) CCAIPOD	(2) CCAIPOD	(2) CCAIPOD
	M275	(22)	(22)	(22)	(22)	(22)	(22)	(22)

Note
1 "ERROR 3" message will be shown during FF/FB mode at the end / top of the track position
2 The image and video cannot be displayed.
3 Please connect iPod again if "ERROR 5" message is displayed by missing connect. If it cannot recover the connection, please reset iPod software.
4 The playlist selection of a Chinese font may be PAUSE status.
5 Cannot play the files in "On-the-Go".
6 During connection the "Accessary Connected" display is shown on the iPod
7 The playlist cannot be reproduced. It returns by reconnecting iPod.
8 When you connect iPod, please connect iPod after stopping playback.
9 "Smart Playlist" not supported.
10 There are some cases when trick play is not effective.
11 Can't display "VIDEO" Key
12 Can't display video files
13 The video contents cannot be controlled by touch panel through the main unit
14 CCA723 is required for playback video contents and the video contents can be

Audio Technologies - iPod Compatability Chart

iPod Mini		iPod Shuffle		iPod Nano			iTouch	iPhone
1Gen	2Gen	1Gen	2Gen	1Gen	2Gen	3Gen	1Gen	1Gen
(21)	(21)	(21)	(21)	(2, 9) iPod Cable	(2, 9) iPod Cable	iPod Cable CCA723 (6,7,8,9,10,13,20)	iPod Cable CCA723 (6,7,8,9,10,13,20)	iPod Cable CCA723 (5,6,7,8,9,10,13,15 16,20)
(21)	(21)	(21)	(21)	(2) CCUIPOD1	(2) CCUIPOD1	(13, 20) CCUIPOD1	(13, 20) CCUIPOD1	(13, 20) CCUIPOD1
(21)	(21)	(21)	(21)	(2, 9) iPod Cable	(2, 9) iPod Cable	iPod Cable CCA723 (6,7,8,9,10,13,20)	iPod Cable CCA723 (6,7,8,9,10,13,20)	iPod Cable CCA723 (6,7,8,9,10,13,20)
(21)	(21)	(21)	(21)	(2, 9, 17) CCA691	(2, 9, 17) CCA691	(2, 9, 13, 17, 20) CCA691	(2, 6, 9,13,17, 20) CCA691	(2,6,9,10,13,17, 20) CCA691
(21)	(21)	(21)	(21)	(2) CCUIPOD1	(2) CCUIPOD1	(13, 20) CCUIPOD1	(13, 20) CCUIPOD1	(13,20) CCUIPOD1
(21)	(21)	(21)	(21)	(2, 9, 17) CCA691	(2, 9, 17) CCA691	(2, 9, 13, 20) CCA691	(2, 6, 9,13, 20) CCA691	(2, 6,9,10,13,17,20) CCA691
(21)	(21)	(21)	(21)	(21)	(21)	(21)	(24)	(24)
(22)	(22)	(22)	(22)	(2) iPod Cable	(2) iPod Cable	(2) iPod Cable	(3, 4, 6) iPod Cable	(3, 4) iPod Cable
(22)	(22)	(22)	(22)	(22)	(22)	(22)	(23)	(23)
CCAIPOD	CCAIPOD	(21)	(21)	(2) CCAIPOD	(2) CCAIPOD	(2) CCAIPOD	(3, 4, 6) CCAIPOD	(3, 4) CCAIPOD
EA1251B	EA1251B	(21)	(21)	EA1251B	EA1251B	EA1251B	EA1251B	EA1251B
(21)	(21)	(21)	(21)	(2) iPod Cable	(2) iPod Cable	(2) iPod Cable	(3, 4, 6) iPod Cable	(3, 4) iPod Cable
(21)	(21)	(21)	(21)	(2) iPod Cable	(2) iPod Cable	(2) iPod Cable	(3, 4, 6) iPod Cable	(3, 4) iPod Cable
(22)	(22)	(22)	(22)	(2) iPod Cable	(2) iPod Cable	(2) iPod Cable	(3, 4, 6) iPod Cable	(3, 4) iPod Cable
(22)	(22)	(22)	(22)	(22)	(22)	(22)	(23)	(23)
(22)	(22)	(22)	(22)	(22)	(22)	(22)	(23)	(23)
(2) CCAIPOD	(2) CCAIPOD	(21)	(21)	(2) CCAIPOD	(2) CCAIPOD	(2) CCAIPOD	(2) CCAIPOD	(2) CCAIPOD
(2) CCAIPOD	(2) CCAIPOD	(22)	(22)	(2) CCAIPOD	(2) CCAIPOD	(2) CCAIPOD	(2) CCAIPOD	(2) CCAIPOD
(22)	(22)	(22)	(22)	(22)	(22)	(22)	(23)	(23)

controlled by touch panel through the VRX / MAX

15 Please connect “Airplane” mode

16 Can’t support Bluetooth connection.

17 There are some limitation when displaying characters other than alphabet and numeric. In this case “*” will be displayed instead.

18 In case iPod is not charged, please turn OFF and ON the POWER of Source unit.

19 There are some cases “clarion” LOGO on the iPod will not disappear when disconnecting the iPod. In that case reconnect iPod to Source unit and disconnect again, or Reset iPod.

20 Apple no longer allows 3rd party video connections to these units. Use Apple Composite AV Cable (p/n: MB129LL/A) and connect to Visual Input.

21 No control over iPod by Source. Use CCAAUX + CCUAUXEX1.

22 No control over iPod by Source. Use CCUAUXEX1.

23 No control over iPod by Source. Use compatible iPhone/iTouch 3.5mm to 3.5mm adapter

24 No control over iPod by Source. Use compatible iPhone/iTouch 3.5mm to 3.5mm adapter + CCAAUX.

Audio Technologies

Bluetooth Connectivity

In efforts to promote driver safety and the safety of others, Clarion is offering several source units featuring a built-in Bluetooth interface and a universal Bluetooth transceiver. Aside from hands-free phone operation, they're also capable of Bluetooth audio streaming (A2DP) and audio/video remote control profiles (AVRCP).

Highlighting the product line up is the EZD580, a 4.3" portable navigation system. This portable navigation system allows Bluetooth operation anywhere life takes you. Whether in the car, home, office, or wandering the streets Bluetooth connectivity is right at your fingertips.

For the mobile entertainment enthusiast, Clarion offer two multimedia control stations with an integrated Bluetooth interface. The VRX785BT (single DIN chassis) and MAX685BT (double DIN chassis) have the ability to transfer the phone book of the paired cell phone for easy dialing and caller identification.

Termed the "metal shark design," the FB275BT and FB275BTB have a built-in Bluetooth interface. The uniqueness of these units is the ability to use the radio preset buttons as direct access to frequently called phone numbers with the paired cell phone.

Rounding off Clarion's Bluetooth connectivity products is the BLT370, universal Bluetooth transceiver. The BLT370 can be interfaced with any source unit that features an auxiliary input or to an amplified speaker. When paired with a cell phone, the BLT370 has a dedicated wire to give commands toa a "Bluetooth Ready" Clarion source unit to automatically swithch to an auxiliary input when placing or receiving a call. Additionally, it has a 2.5mm input for an optional microphone (mono).

There is no compromise for safety and that's why Clarion offers products with integrated Bluetooth connectivity and a universal Bluetooth transceiver compatible with any source unit.

NOTE:

For a detailed description of Bluetooth and Bluetooth profiles, please to refer to Bluetooth Technology section of the Clarion Application Guide.

Bluetooth Accessories

BLT370: Bluetooth Audio/Mobile Phone Transceiver

- Can be interfaced with any source unit with an auxiliary input.
- Bluetooth Audio Streaming (A2DP)
- Circut for Bluetooth ready Source Units
- 2.5mm Microphone Input

RCB199: External Microphone for VRX785BT and MAX685BT

- External uni-directional microphone cuts down much of the background noise.
- Integrated Visor Mount
- 3.5mm Mini-Jack
- BLT370 requires 3.5mm to 2.5mm male adaptor

Bluetooth Basics

Bluetooth wireless technology is a short-range communications technology intended to replace the cables connecting portable and/or fixed devices while maintaining high levels of security.

The Bluetooth specification defines a uniform structure for a wide range of devices to connect and communicate with each other.

Bluetooth technology has achieved global acceptance such that any Bluetooth enabled device, almost everywhere in the world, can connect to other Bluetooth enabled devices in proximity.

Bluetooth enabled electronic devices connect and communicate wirelessly through short-range, ad hoc networks known as piconets. Each device can simultaneously communicate with up to seven other devices within a single piconet. Each device can also belong to several piconets simultaneously. Piconets are established dynamically and automatically as Bluetooth enabled devices enter and leave radio proximity.

A fundamental Bluetooth wireless technology strength is the ability to simultaneously handle both data and voice transmissions. This enables users to enjoy variety of innovative solutions such as a hands-free headset for voice calls, printing and fax capabilities, and synchronizing PDA, laptop, and mobile phone applications to name a few.

Bluetooth Profiles

Advanced Audio Distribution Profile (A2DP)

A2DP describes how stereo quality audio can be streamed from a media source to a sink. A2DP defines the protocols and procedures that realize distribution of audio content of high quality in mono or stereo on ACL channels. The term “advanced audio”, therefore, should be distinguished from “Bluetooth audio”, which indicates distribution of narrow band voice on SCO channels as defined in the baseband specification.

Audio/Video Remote Control Profile (AVRCP)

AVRCP is designed to provide a standard interface to control TVs, hi-fi equipment, or other to allow a single remote control (or other device) to control all the A/V equipment that a user has access to. It may be used in concert with A2DP.

AVRCP defines how to control characteristics of streaming media. This includes pausing, stopping and starting playback and volume control as well as other types of remote control operations.

Hands-Free Profile (HFP)

HFP describes how a gateway device can be used to place and receive calls for a hand-free device. A typical configuration is an automobile using a mobile phone for a gateway device. In the car, the stereo is used for the phone audio and a microphone is installed in the car for sending outgoing audio. HFP is also used for a personal computer to act as a speakerphone for a mobile phone in a home or office environment.

Headset Profile (HSP)

The HSP describes how a Bluetooth enabled headset should communicate with a computer or other Bluetooth enabled device such as a mobile phone. When connected and configured, the headset can act as the remote device’s audio input and output interface.

Object Exchange (OBEX)

OBEX is a transfer protocol that defines data objects and a communication protocol two devices can use to exchange those objects. OBEX is designed to enable devices supporting infrared communication to exchange a wide variety of data and commands in a resource-sensitive standardized fashion. The OBEX protocol also defines a folder-listing object, which is used to browse the contents of folders on remote device. OBEX enables applications to work over the Bluetooth technology protocol stack as well as the IrDA stack. For Bluetooth enabled devices, only connection-oriented OBEX is supported. Three application profiles have been developed using OBEX that include SYNC, FTP and OPP.

Object Push Profile (OPP)

OPP defines the roles of push server and push client. It is called push because the transfers are always instigated by the sender (client), not the receiver (server). OPP focuses on a narrow range of object formats to maximize interoperability. The most common acceptable format is the vCard. OPP may also be used for sending objects such as pictures or appointment details.

USB Connectivity

For 2008, USB connectivity was the focal point in the development of eleven multimedia and CD source units. USB connectivity provides easy music transporting from your computer via USB Mass Storage Device (a.k.a. jump drives) or compatible music player to your Clarion source unit. In selected source units, it also provides USB iPod Direct Connect connectivity. Allowing iPod owners to connect their iPod using an USB cable with direct access to playlist, albums, artists, composers, or songs.

An additional advantage of Clarion USB ports is they're all powered. What does this mean? This means it can be used to recharge the battery of commonly used devices such as cellular phones, portable navigation units, iPods, and more through the USB port.

Multimedia Source Units:
MAX685BT (rear USB port, USB iPod Direct Connect)
VRX785BT (rear USB port, USB iPod Direct Connect)
VRX585USB (rear USB port, USB iPod Direct Connect)
VRX385USB (rear USB port, USB iPod Direct Connect)

CD Source Units:
DXZ785USB (rear USB port, USB iPod Direct Connect)
DXZ585USB (front USB port, USB iPod Direct Connect)
DXZ385USB (front USB port, USB iPod Direct Connect)
DB285USB (front USB port)
DUZ385SAT (rear USB port, USB iPod Direct Connect)
UDB275MP (front USB port)

USB Accessories:
CCAUSB: USB 2.0 Extension with Integrated Cover
- 1 Meter Cable with gold plated copper contacts providing maximum conductivity with minimal data loss.
- Requires ¾" hole for mounting

NOTE:
USB Mass Storage Class devices (a.k.a. jump drives) that require special software or contain software drivers may not be detected when connected to USB equipped source units. Check the manufacturer's specification before proceeding.

SD Card Connectivity

Storage devices come in all shapes and sizes, but one of the most commonly used is the SD (Secure Digital) Memory Card. Smaller than a pack of matches, these media storage devices can store thousands of songs. Clarion offers three source units capable of SD memory card playback: FB275BT, FB275BTB, and DFZ675MC

Audio Technologies

All three source units allow users to scroll through files and folders with same features usually associated with CD playback. Features like, fast forward, fast rewind, scan play, folder scan, repeat play, folder repeat play, and random play. In addition, the ability to display folder name, file name, album name, or artist name for easy identification of what's playing

Clarion philosophy on SD memory cards is simple, "load 'em, play 'em!"

NOTE:
It is recommended not to use SD memory cards exceeding 1GB.

Auxiliary Inputs

For 2008, Clarion's multimedia, CD source units, and Marine source units all feature an adjustable sensitivity auxiliary input. Thus eliminating the crude and inferior FM modulation of an external audio source. Whether connecting a Bluetooth interface, portable music player, satellite radio receiver, video game station, video player, or computer is simple. Merely connect a standard audio cable for the audio source into the auxiliary input on the source unit.

To ensure excellent sound quality and matching the audio levels through the various sources on head unit, Clarion incorporated an auxiliary level sensitivity adjustment. This eliminates variations in volume while switching from the internal audio sources to an external audio source. In addition, it minimizes the audio clipping which can generate distortion and other unwanted noise.

No matter the source, Clarion has you connected.

Auxiliary Input Accessories:

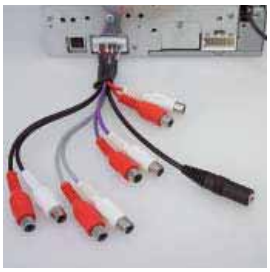
CCAAUX: Female 3.5mm Stereo Mini-Jack to Male RCA Extension Cable with Integrated Cover

- 3.5mm Gold Plated Stereo Mini-Jack
- 1 Meter OFC RCA Cable with Gold Plated RCA Connectors
- Integrated Protective Cover
- Requires ¾" Hole for Mounting

CCUAUXEX1: 6' Male 3.5mm to 3.5mm Audio Cable

- 3.5mm Gold Plated Stereo Audio Cable
- Used to connect portable audio players to CCAAUX or Front panel Auxilliary input

Multimedia Source Units
MAX685BT (rear RCA input)
MAX385VD (rear RCA input)
VRX785BT (rear RCA input)
VRX585USB (rear RCA input)
VRX485VD (rear RCA input)
VRX385USB (rear RCA input)



CD Source Units
DRZ9255 ('2' rear RCA inputs)
DXZ785USB (rear RCA input)
DXZ585USB (rear RCA input)
DXZ385USB (front panel 3.5mm input)
DXZ285USB (front panel 3.5mm input)
DB185MP (front panel 3.5mm input)
DUZ385SAT (front panel 3.5mm input)
UDB275MP (front panel 3.5mm input)
DFZ675MC (front panel 3.5mm input)

Marine Source Units
CMD5 (rear RCA inputs)
M475 (front panel 3.5mm input)
M275 (front panel 3.5mm input)

OEM Remote Ready

With more and more vehicles featuring radio controls integrated in the steering wheel, it is more important than ever to offer aftermarket source units capable of interfacing with them. That's why Clarion offers a host of multimedia control stations and CD source units with the capability of adding a third party OEM steering wheel remote interface.

These third party interfaces utilize the key functions found on the steering wheel, such as volume, mute, seek, track, band, and source controls. By allowing the driver to control the primary functions of the source unit from the steering wheel, it minimizes distractions and removal of the hand from the steering wheel to adjust the source unit.

For additional information regarding OEM steering wheel interfaces, please visit: **www.pac-audio.com**, **keyword: SWI-JACK & SWI-CAN**

OEM Steering Wheel Remote Ready Multimedia Control Stations:

VRX785BT	VRX585USB
MAX685BT	VRX385USB

OEM Steering Wheel Remote Ready CD Source Units:

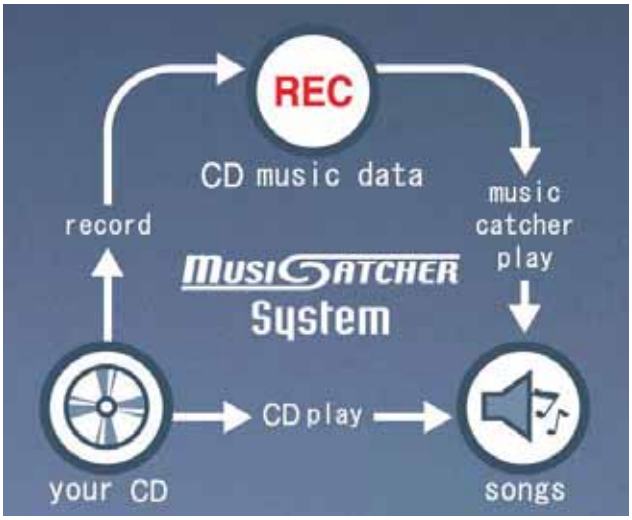
DXZ785USB	DB285USB	UDB275MP
DXZ585USB	DB185MP	
DXZ385USB	DUZ385SAT	

Music Catcher II

Clarions evolved Music Catcher System II can be found on the DFZ675MC. Music Catcher II, which utilizes an on-board flash memory module, allows one to record, play and erase up to 13 CDs worth of music (Music Catcher will not record MP3/WMA files). Music Catcher offers four recording modes to choose from, so you can choose between storage capacity and fidelity.

Music Catcher II is also capable of recording audio at up to 4x normal playback speed, letting you record your favourite songs faster than ever. Load your favourite CD, hit record, and in 1/4 the time it takes to listen to the song, Music Catcher II has stored it in its flash memory IC.

By using the Music Catcher System, no longer is there a need to carry around fragile CD storage cases, or risk damage to your favourite CD.



Phone Mute Input

Clarion source units feature a Cell Phone mute input wire. As discussed previously, this wire also functions as the Bluetooth Control wire on Bluetooth Ready source unit models.

In its normal function, when a (-) ground signal is applied to the brown wire in the radio harness, the radio will mute the audio output until the (-) ground signal is removed. This is designed to be used with Cellular phone car kits.

2008 Bluetooth Ready source units feature a programming option that will, when enabled, switch the source unit to the auxiliary input when (-) ground is applied to the brown wire. This is for use with the BLT370 Bluetooth Interface.

Navigation Ready

Clarion is a world leader in the development of GPS Navigation systems, manufacturing OEM systems for the top car manufacturers in the world, including Porsche, Nissan, Infiniti, Volkswagen, Ford and more.

Audio Technologies

For 2008, Clarion offers two source units that are Navigation Ready - the 1-DIN VRX785BT and the 2-DIN MAX685BT. These source units feature an RGB connection on the back of the radio that accepts a high resolution video signal from our NAX980HD Navigation System, as well as programming to provide full touch screen control over all navigation functions. These source units will also mute the audio signal to allow navigation commands to come through loud and clear while you are driving.

2-Zone Entertainment

Clarion offers four source units that offer 2-Zone Entertainment. This function allows front seat passengers to listen to one audio source while rear seat passengers can enjoy another through and overhead or headrest monitor with headphones.

The rear seat passengers can enjoy a DVD movie with the front seat passengers can listen to the Radio Tuner, iPod or Visual Input. Volume control over the 2-Zone output is performed by the headphones as the 2-Zone output is line-level.

Please review your source unit owner's manual for limitations pertaining to 2-Zone functionality with respect to specific accessories.

CCD Camera Input

The Clarion VRX785BT, MAX685BT, VRX585USB and VRX385USB feature a dedicated CCD camera input jack on the rear of the source unit. When connected to the CK625E camera kit, the camera input will be triggered automatically when the vehicle is put in reverse. This makes backing up safe and secure.

A/V Inputs

This additional A/V input allows you to connect and external A/V source such as a video game system or TV Tuner (TTX005) to your multimedia source unit. This allows for system expansion and when combined with the MSS430 Source Commander A/V Switcher, can be at the heart of a massive multimedia system.

A/V Outputs

This allows you to connect the output of the internal DVD player, or Visual input to an external monitor. The A/V output features a line-level audio signal. The connected device must have it's own volume control. Compatible devices include overhead or headrest monitors with wireless headphones.

Video Distribution

Any time a video signal is to be split and connected to multiple vide sources, the use of a proper electronic video distribution amplifier is required. The Clarion VA700 provides seven buffered video outputs from a single composite video input connection.

Using the VA700 will ensure that picture quality remains clear and sharp and the brightness and contrast levels are not altered. The use of Y-cables is not an option for splitting a composite video signal as the signal voltage determines the black level of the image, and will be altered when split.

Compressed Media Formats

Transmitting audio and data via satellite spawned the need to various formats of media compression. These formats allow multiple signals to occupy the same bandwidth as an uncompressed signal. This increased efficiency, reduces cost and allows more data to be transmitted at higher speeds.

Clarion is at the forefront of compressed media file playback. For 2008, Clarion offers support for AAC, DiVX and MPEG compressed media files to our already extensive list.

WAVE Format

Wave (.wav) files are considered to be uncompressed. This is file format is used for the storage of 2-channel audio in digital form. The file is stored in PCM (Pulse Code Modulation) form and uses the standard 44,100 samples per second, 16 bits per sample times two channels. The resulting data rate is 1,411.2 kbps.

MP3 Format

MP3 files gained popularity due to their reduced file size. MP3 stands for MPEG-1 Audio Layer 3. MP3 files use perceptual encoding to reduce files sizes while limiting the effect on sound quality.

The MP3 standard allows for bitrates between 32 kbps and 320 kbps with sampling rates of 32, 44.1 and 48 kHz. A higher bitrate represents less compression and better (relative to the original) sound quality.

ID3 Tag Display

ID3 tags were created and inserted at the end of an MP3 file allow for the storage of metadata information such as song title, artist, album name, genre and year.

WMA Format

WMA (Windows Media Audio) is a compressed audio file format created by Microsoft. It is very similar in concept to MP3 files, but includes provisions for DRM (Digital Rights Management). Microsoft originally claimed that WMA files had better sound quality than MP3 files recorded at the same bitrate. Subsequent double-blind testing have repeatedly confirmed that the file formats are very similar.

AAC Format

AAC (Advanced Audio Coding) is another lossy compression and encoding format for digital audio. The AAC format has been made popular as it is the standard format for the Apple iPod.

AAC offers more sample and bitrate options as compared to MP3 files. Sampling rates from 8 kHz to 96kHz are available) and up to 48 channels can be encoded.

AAC happens to the default audio codec used on the PlayStation 3, PSP, the Apple iTunes website and iPod products.

DivX

At the forefront of compressed video technology is the DivX codec. The latest version of this codec, called DivX 6 (or DivX Media Format) reduces the file size of digital movies while retaining support for multiple audio tracks, interactive menus, chapter points, multiple video streams and subtitles.

For 2008, the Clarion VRX785BT, MAX685BT, VRX385USB and VRX585USB support the DivX Media Format in its native form. Offering high quality, fully interactive movie playback. These units are fully DivX Certified.

CD Text

CD Text is an extension of the standard audio CD format and allows Album Name, Song Name and Artist information to be stored on a standard audio CD. Source units bearing the CD Text logo are capable of displaying this information from compatible discs. Not all store-bought CD's are encoded with CD Text information. Look for the

CD Text logo on the packaging or disc to confirm proper encoding.

MPEG 1, 2 and 4

The Motion Picture Experts Group (MPEG) is a group that oversees the development of video and audio encoding standards. The various MPEG standards outline the capabilities of each compression format.

MPEG-1
This was the initial audio and video compression standard and later became the standard for the Video CD. It utilizes MP3 for the audio track.

MPEG-2
The is the standard format for audio and video broadcast for standard television. It is used for over-the-air broadcast, as well as Dish Network, digital cable and with some slight variations, on DVDs.

MPEG-4
This is an expansion of the MPEG-1 format and adds the ability to support audio/video objects, low bitrate encoding, 3D content and support for Digital Rights Management (DRM)

Video CD

Video CD (VCD) is the standard digital format for storing video on a compact disc. The VCD format offers a resolution of 352x240 pixels with an aspect ratio of 107:80 (within 0.3% of 4:3) and a framerate of 29.97 or 23.976 frames per second and a bitrate of 1.150 kbps

MP3 on DVD

Storing MP3 files on a DVD provides you with the ability to have days and days of music on hand, on a single convenient disc.

Please review the directory structure guidlines in the owner's manual of each product.

Performance Technologies and Features

Signal Processing

Clarion products remain at the forefront of sound quality and performance. Our source units have features that allows your mobile audio system to recreate sound that is closer to the original recording than ever before. These features include advanced signal restoration for compressed audio, digital equalization, advanced D/A converters and digital storage systems.

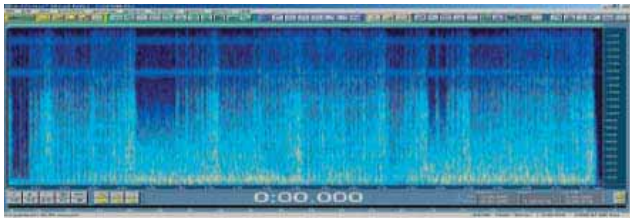
Clarion calls the concept of remaining true to the original audio recording Sound Genesis. This is at the heart of everything Clarion does.

Sound Restorer

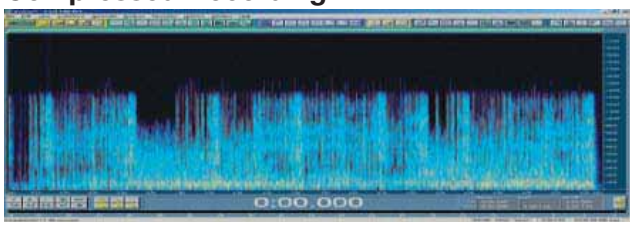
Compressed audio files allow a large amount of information to be stored in a small space. The drawback is that some of the audio information, particularly in the high frequency range is lost.

Clarion introduces Sound Restorer - a digital technology that analyzes a musical waveform for high frequency content, then recreates harmonics to restore those lost during compression.

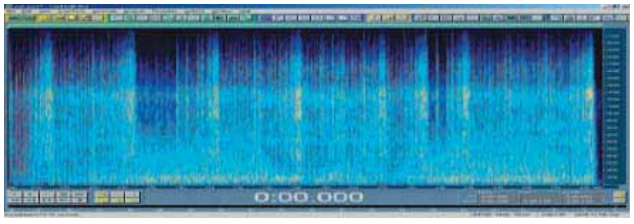
Original Recording



Compressed Recording



Sound Restorer Processed Recording

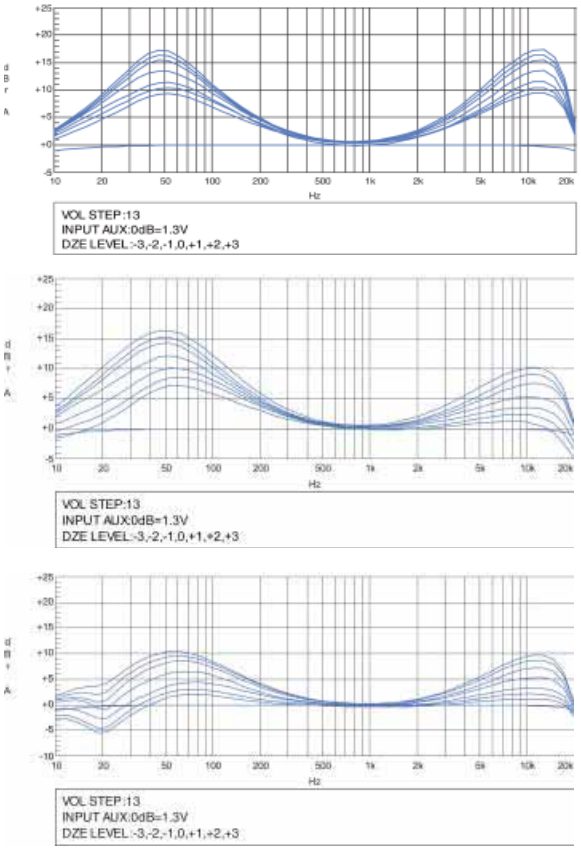


The result of Sound Restorer processing is music that sounds more like the original recording. The subtle nuances and harmonics are recreated and your music won't sound like compressed music any more.

Digital Z-Enhancer

High performance system equalization to compensate for factory speaker performance or vehicle acoustics has never been easier, thanks to Digital Z-Enhancer.

Clarion's Digital Z-Enhancer features three preset equalization curves, each with 7 'effect' levels. The result is 21 different easily accessible curves to make altering the performance of your audio system quick, easy and satisfying.



Digital Z-Enhancer can be found on the DFZ675MC, DXZ785USB and DXZ585USB.

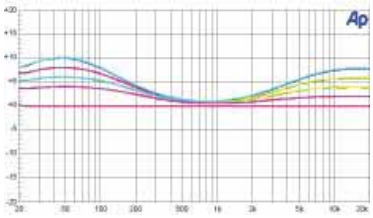
Performance Technologies and Features

Z-Enhancer

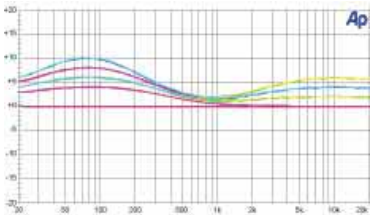
Making system tuning as easy as possible is one of the primary concepts behind HMI. Z-Enhancer makes tuning as easy as pushing a button.

Z-Enhancer offers bass and treble equalization via three preset EQ curves, each curve is adjustable in effect level in seven steps from -3 to +3.

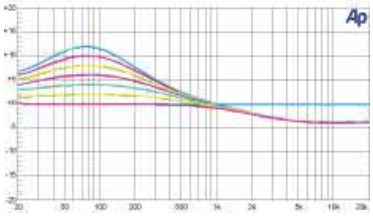
Excite - Emphasizes Bass and Treble while dempahsizing midrange



Impact - Emphasizes Bass and Treble



B-Boost - Emphasizes Bass



3-Band Parametric Equalizer

This advanced equalization system is found on the MAX685BT and VRX785BT. A parametric equalizer allows for advanced and detailed system frequency response adjustment.

The 3-Band Parametric Equalizer allows you to adjust the bass and midrange for Q-factor (bandwidth), Boost and Center Frequency. Treble is adjustable only for Boost and Center Frequency.

Here are the parameters for each of the frequency bands:

Bass: Boost: -12 to +12dB
Q-Factor: 1, 1.25, 1.5 or 2
Frequency: 50, 80 or 120 Hz

Mid: Boost: -12 to +12dB
Q-Factor: 1.5 or 2
Frequency: 700Hz, 1kHz or 2kHz

Bass: Boost: -12 to +12dB
Frequency: 8kHz or 12kHz

5-Band Parametric Equalizer

The DRZ9255 features a 5-Band parametric equalizer. This evolves its flexibility and tuning features to allow for perfect frequency response adjustment. The 5-Band parametric equalizer allows allows for independent left and right channel adjustment. The copy command allows you to quickly duplicate settings from one channel to the other. Here are the parameters for the different bands:

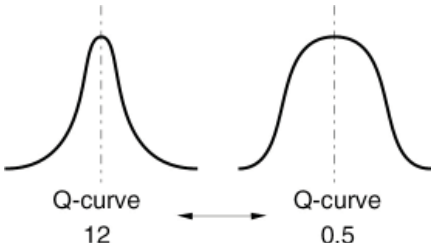
Band 1, 2 and 3
Boost: -12dB to +12dB
Q-Factor: 0.5 to 12.0
Frequency: 50Hz to 20kHz
Band 4 and 5
Boost: -12dB to +12dB
Q-Factor: 0.5 to 12.0
Frequency: 630Hz to 20kHz

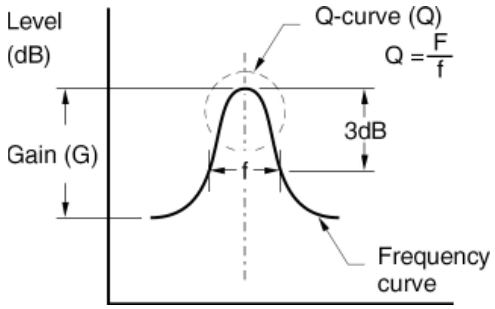
Q-Factor

The following graphs show the relationship between center frequency, gain and Q-curve.

When a large Q-Factor number is selected, the Q-curve becomes sharper. When a small Q-Factor number is chosen, the Q-Curve becomes wide. The shape of the Q-Curve determines the range of frequencies the boost or cut will affect.

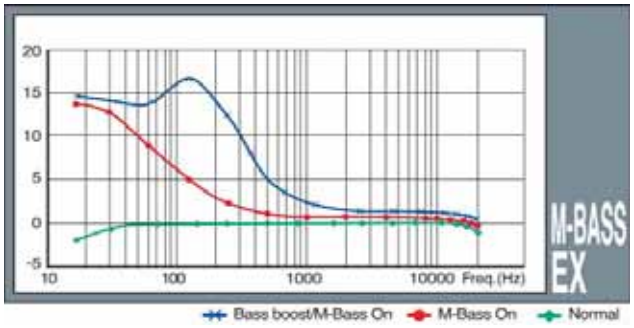
The calculation that determines the Q-Factor is based on the center frequency of the equalization, and the bandwidth at the -3dB point.





Magna Bass EX

Conventional loudness circuits boost bass frequencies around 100Hz. This results in a muddy over-boosted sound which is un-natural. Magna-Bass EX focuses the bass boost at 50Hz, adding warmth and richness to the sound. This 50Hz boost efffectively extends the frequency response of smaller speakers, making you system sound larger and more capable. The result is dynamic bass performance that sounds real.



Time Alignment

Advanced Digital Signal Processing (DSP) allows for intricate and complex mathematical functions to be performed on an audio signal. One of these advanced functions is Time Alignment.

Time Alignment refers to the ability to adjust the relative arrival time of one signal as compared to another.

To make adjusting time alignment easy, Clarion calibrates our two time alingment systems (found on the DRZ9255 and DXZ785USB) in units of measure, rather than in units of time. This means you can simply take out a tape measure and record the distance from the listener to each speaker. Fine tuning by a trained ear will result in an excellent soundstage and realistic audio performance.

DRZ9255

The DRZ9255 offers the industries finest time alignment adjustment steps. You can adjust each channels delay in 0.7cm (roughly 1/4-inch) steps to perfectly align the output of each channel. The DRZ9255 feautres 8 channels of output (Subwoofer, Low, Mid and High) and both left and right outputs are adjustable independantly. The maximum distance is 512.4cm (roughly 201 inches). This is perfect for a three-way front stage and subwoofer system.

DXZ785USB

This is the little brother to the flagship DRZ9255, but is still incredibly potent. The time alignment on this unit is adjustable in 2.3cm (roughly 1 inch) steps. There are six channels of output on the DXZ785USB (Low, Mid and High) and of course, each of the six is adjustable independantly. This is perfect to a bi-amped (2-way) front stage plus subwoofer system. The maximum delay is 501.4cm (just under 200 inches).

Electronic Crossovers

Electronic crossovers are designed to pass only a certain range of frequencies through a circuit. There are two types of eletronic crossovers: High-Pass and Low-Pass.

A High-Pass crossover will allow only those frequencies above (higher than) the crossover point to pass through. This type of crossover is used on tweeters to protect them from low and midrange frequencies and on midrange drivers to protect them from low frequencies.

A Low-Pass crossover will only allow those

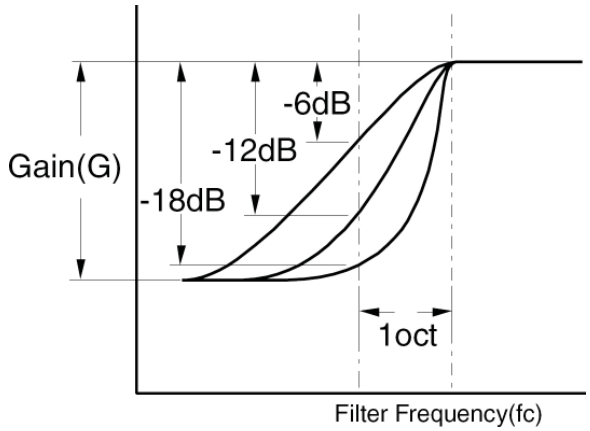
frequencies below (lower than) the crossover point to pass through. This type of crossover is used on subwoofers to keep midrange and high frequencies from being reproduced.

A combination of High- and Low-Pass crossovers may be used to fliter both and low frequencies passed to a device such as a midrange or mid-bass driver. This is called a Band-Pass crossover.

There are two important numbers to consider when considering a crossover - the cutoff frequency - fc and the crossover slope.

The crossover frequency determines the point at which the filter will start to work. For example, a High-Pass crossover set to 100Hz will attenuate the frequencies below 100Hz and pass frequencies above 100Hz.

Crossover slope describes the rate at which the crossover attenuates those frequencies.



Speakers are designed to operate within a specific range of frequencies. Sending frequencies to a speaker that it was not designed to handle reduces its performance and could result in poor sound quality. For 2008, Clarion includes electronic Low-Pass and High-Pass crossovers on the DXZ385USB through DXZ785USB source units.

The electronic crossovers found in Clarion source units not only affects the pre-amp outputs, but the signal being sent to the internal amplifier as well. This means you can use a high-power source unit to run your speakers, while an amplifier and subwoofer can handle low frequency output. Clarion electronic crossovers are all adjustable for frequency and are easy to implement.

The following chart outlines the crossover functionality in each unit.

Source	HPF Frequency	HPF Slope
DB185MP		
DB285USB		
DXZ385USB	120Hz	6dB
DXZ585USB	50/80/120Hz	12dB
DXZ785USB	50/80/120Hz	12dB
MAX685BT	50/80/120Hz	12dB
VRX785BT	50/80/120Hz	12dB
VRX585USB	120Hz	6dB
VRX485VD	N/A	N/A
MAX385VD	N/A	N/A
VRX385USB	120Hz	6dB

Source	LPF Frequency	LPF Slope
DB185MP	Level Control	
DB285USB	Level Control	
DXZ385USB	50/80/120Hz	12dB
DXZ585USB	50/80/120Hz	12dB
DXZ785USB	50/80/120Hz	12dB
MAX685BT	50/80/120Hz	12dB
VRX785BT	50/80/120Hz	12dB
VRX585USB	50/80/120Hz	12dB
VRX485VD	60/120/180Hz	12dB
MAX385VD	60/120/180Hz	12dB
VRX385USB	50/80/120Hz	12dB

DXZ785USB Crossovers

The DXZ785USB features three different operating modes - 2-Way, 3-Way and Normal.

The following chart outlines the output functions in each mode:

Mode	Front	Rear	Subwoofer
Normal	Front	Rear	Subwoofer
3-Way	High	Mid	Subwoofer
2-Way	High	Mid	Rear

The internal amplifier receives the same signal as the front and rear RCA channels to allow a 2-Way or 3-Way system to be built using only an amp for the subwoofer or rear speakers.

The crossover settings associated with these modes are outlined as follows:

High

Items	Range	Initial value
Filter (HPF)	25Hz-20kHz & Thru	2 kHz
Slope	6, 12 or 18dB	12dB
Phase	normal / reverse	Normal

Mid

Items	Range	Initial value
Filter (LPF)	630Hz-10kHz & Thru	2 kHz
Slope (LPF)	6, 12 or 18dB	12dB
Filter (HPF)	25Hz-10kHz & Thru	Through
Slope (HPF)	6, 12 or 18dB	12dB
Phase	normal / reverse	Normal

SUB (3-Way) / (Rear 2-Way)

Items	Range	Initial value
Filter (LPF)	25Hz-10kHz & Thru	80Hz
Slope (LPF)	6, 12 or 18dB	12dB
Filter (HPF)	16Hz-250Hz & Thru	Through
Slope (HPF)	6, 12 or 18dB	12dB
Phase	normal / reverse	Normal

Normal

Items	Range
Front/Rear(HPF)	50/80/120Hz
Sub (LPF)	50/80/120Hz

DRZ9255 Crossovers

The DRZ9255 features three different operating modes - Standard, Multi and Direct.

The following chart outlines the output functions in each mode:

Mode

Direct	Front, Rear & Non-Fader
Multi	High, Mid, Low & Subwoofer
Standard	Front High, Front Low, Rear & Subwoofer

The crossover settings associated with these modes are outlined as follows:

Direct Mode

No crossovers active in this mode

Standard (Front 2-Way) Mode

Items	Range
High (HPF)	315Hz to 20kHz
Front (LPF)	250Hz to 20Khz & Through
Rear (HPF)	25Hz to 250Hz & Through
Sub (LPF)	25Hz to 250Hz & Through
Sub (HPF)	16Hz to 80Hz & through
Slope (ALL)	6, 12 or 18dB / Octave
Gain (ALL)	0 to -24dB

Multi Mode

Items	Range
High (HPF)	315Hz to 20kHz
MID (LPF)	250Hz to 20Khz & Through
MID (HPF)	200Hz to 20Khz & Through
LOW (LPF)	250Hz to 10kHz & Through
LOW (HPF)	25Hz to 250Hz & Through
Sub (LPF)	25Hz to 250Hz & Through
Sub (HPF)	16Hz to 80Hz & through
Slope (ALL)	6, 12 or 18dB / Octave
Gain (ALL)	0 to -24dB

Performance Technologies and Features

D/A Converters

Converting digitally stored information (such as that found on a Compact Disc or DVD) back into an analog signal is the job of the D/A Converter.

The D/A converter reads each 16-bit word from the disc and assigns it an analog voltage. A conventional D/A Converter repeats this task 44,100 times a second.

The accuracy of the D/A Converter in terms of voltage and timing are a key component to determining the sound quality capabilities and noise output of the source unit.

1-Bit

A 1-Bit D/A converter works by comparing one bit of information to the one previous to it. If the new bit is higher than the previous one, it increases the output voltage. If the new bit is lower than the previous, then it decreases the output voltage. A filter on the output of the D/A Converter smoothes out the signal and the result a reproduction of the original audio waveform.

24-Bit

Clarion source units featuring our 24-Bit D/A converter bring new realism and detail to your music. 24-Bit D/A converters offer several benefits as compared to a conventional 1-Bit D/A converter. Primarily, a 24-Bit D/A converter significantly increases dynamic range capability, reduces quantization error and improves jitter. The result is music that sounds more realistic, especially in the high frequency range. Cymbals become clearer and more detailed. Ambience and room effects become more accurate. The entire listening experience takes a step forward in fidelity and authenticity.

This effect can be clearly heard on even the most basic of audio systems. Comparing one source unit to another, even when using four factory speakers will reveal a very significant improvement in performance.

24-Bit 96kHz

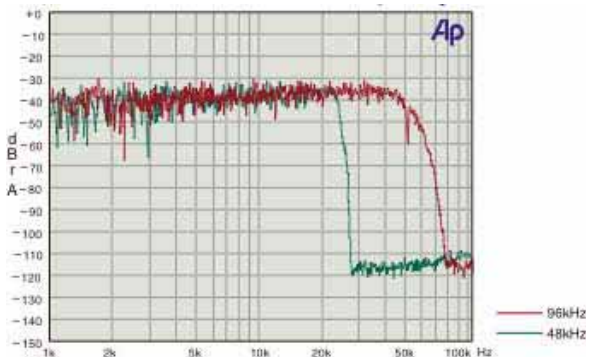
At its price point - there is nothing like the DRZ9255 in the industry. It's not just the incredible time alignment, equalization and state of the art hardware - its got technology too.

The DRZ9255 features a 96kHz 24-Bit D/A converter. Why is this important?

The sampling rate (or how often the D/A converter converts a digital signal back to analog) defines the highest frequency that can be reproduced. A conventional D/A converter operates at 44.1kHz and as defined by the Nyquest Frequency (the highest frequency that can be reproduced is half of the sampling frequency). The highest frequency that can be reproduced is 22.05kHz.

The 96kHz D/A converter in the DRZ9255 operates at twice this frequency, moving the maximum reproducible frequency up to 48kHz.

Any time a filter is implemented in a circuit, it not only affects frequency response, but also phase response (the relative arrival time of different frequencies). What does this mean for the end-user? Moving the high frequency roll-off up one octave higher means that the DRZ9255 can reproduce high frequencies with coherence, detail and clarity. Clarion was the first company to implement a 96kHz DAC in the car audio industry.



Frequency response of the DRZ9255 as compared to a conventional 44.1kHz D/A Converter.

Performance Technologies and Features

High Voltage Preamp Outputs

Noise is bad. From the noise of the wind whistling past your windows to the hum of your tires on the road, noise makes it harder for us to enjoy our music. When it comes to music, having noise in your system is no fun at all. Clarion offers three step-up preamp output systems for 2008.

6 Volt preamp output provides a 4.5dB reduction in noise. The DRZ9255 can provide 8Vrms of output on it's 8 channels. This equates to 6dB less noise from your amplifiers / system.

Low Impedance Preamp Output

All Clarion preamp outputs feature low output impedance drive circuitry. Output impedance is most commonly looked at in terms of a resistance measurement, in the case of Clarion preamp outputs, this specification is ~330 Ohms.

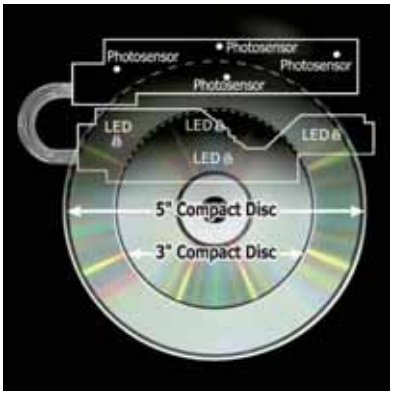
This has several effects in terms of sound quality as compared to products that have high output impedances (1,000+ Ohms). More of the audio signal voltage is passed to the load device. The preamp is capable of driving lower impedance loads (necessary should RCA Y-cables be used). The audio signal is less succeptable to frequency response degradation caused by reactances in the RCA cables or the input stage of the amplifier or processor.

Many processors and amplifiers use DC blocking capacitors on their inputs. When a high-impedance source unit is connected to these loads, the bass and treble performance can suffer. Low impedance outputs result in flatter frequency response and more output from your amplifiers.

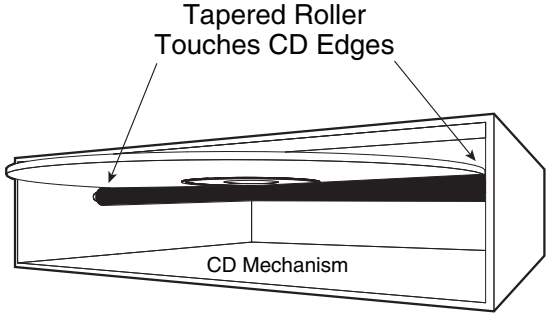
CD Operational Safeguards

Clarion's CD operational safeguards allow the CD mechanism to detect disc size, prior disc-in-drive detection, foreign object detection, and allow for auto reload.

Clarion's CD mechanism uses photosensors and LEDs to identify 3" or 5" compact discs. Clarion's CD mechanism uses a tapered roller to precisely center the CD onto the drive spindle.



A tapered loading-roller precisely centers the CD onto the drive spindle. Since the roller mechanism is tapered, only the edges of the CD are touched, thereby eliminating the possibility of scratches.

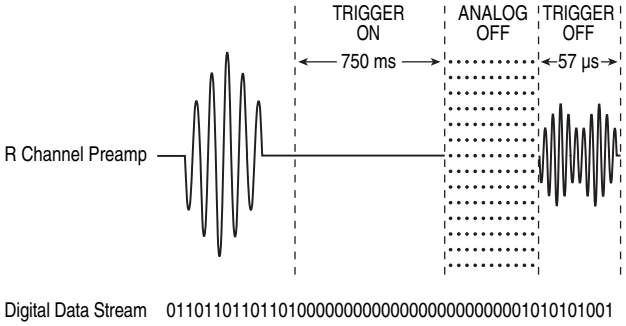


These operational safeguards allow safer CD disc handling, prevent jams from accidental loading of two CDs, and help to reduce service problems by detecting foreign objects in the drive mechanism.

Performance Technologies and Features

Zero-Bit Detector Mute

Clarion CD Players feature a zero-bit detection mute circuit. This circuit turns off (mutes) both the line-level and speaker-level outputs when it does not see a digital signal for 750 milliseconds. Since a digital signal consists of “one” and “zero” bits, the zero-bit detector will turn off the analog audio input signal to the preamp section when it sees a series of zero bits. The purpose of this circuit is to eliminate tracking noise or background noise that is typically associated with the decoding of the digital signal to its final analog form.



The zero-bit detector mutes the preamplifier analog outputs after a series of zero bits exceeds 750-ms. Audio is restored after a period of one and zero bits is longer than 57 µs.

CEA-2006 Ratings

All new Clarion amplified products have been rated using the CEA-2006 specification. This specification was created to allow power production numbers to be compared between one brand and another without concern for measurement type.

The CEA-2006 specification states that power measured using this format will be constant through the entire specified audio bandwidth range. The power measurement will be taken with 14.4V being supplied and the distortion from the output signal can't exceed 1%.

Just as with the power ratings, Signal to Noise (S/N Ratio) measurements will follow similar guidelines. The S/N Ratio measurement will be taken at a power level of 1W into a 4 Ohm load. This means that all device measurements will be comparable, no matter how much power the product produces.

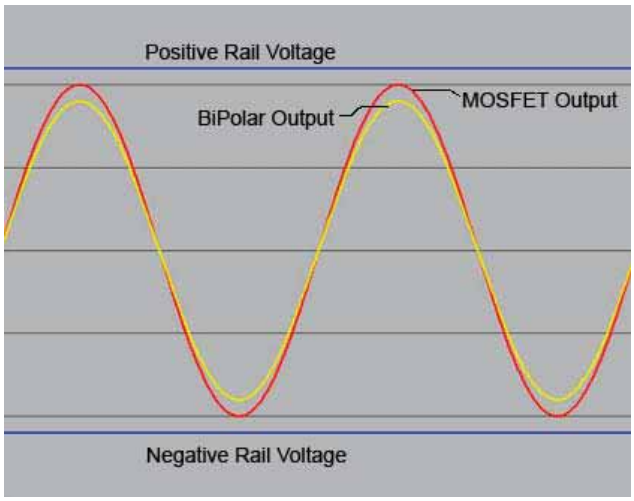
MOSFET Power IC

The MOSFET Power IC is smaller and more efficient than previous amplifier designs. MOSFET amplifiers are capable of producing more power because the output voltage can be switched closer to the rail voltage. In a head unit, with only 12V of power being supplied from the cars electrical system, this is critically important to maximizing amplification capabilities.

The solid horizontal lines denote the positive and negative amplifier power supply rail voltage.

The smaller sine wave shows the maximum undistorted output from a standard bipolar output transistor.

The larger sine wave shows the maximum undistorted output from a MOSFET output device.The net result - more voltage means more power.



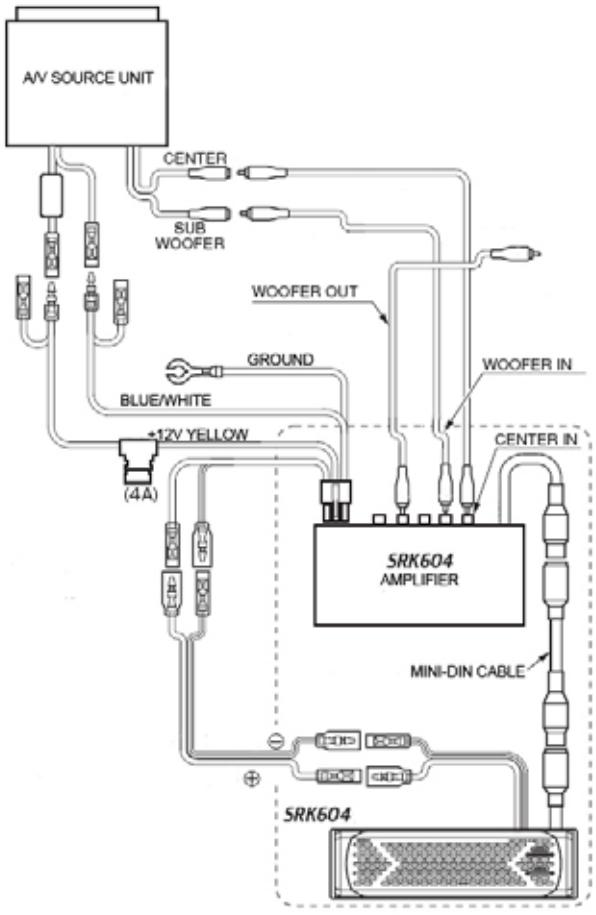
Center Channel

Making the installation and integration of a center channel easier than ever is the SRK604 1-DIN center channel.

The SRK604 features a pair of 30mm dome mid-range drivers and a 20mm dome tweeter. The SRK604 also includes a 40W amplifier.

The front panel of the SRK604 offers a center channel level control, as well as a subwoofer level control for a pass-through RCA signal.

To help explain the concept of the center channel operating and configuration, we have included a basic wiring diagram.



You also have the option of running the subwoofer signal in stereo should your source unit provide a stereo subwoofer signal. The SRK604 does not include an electronic crossover, only a subwoofer level control.

High Resolution LCD Displays

All Clarion LCD display screens use the latest in active matrix technology to give you the brightest, most detailed image available. Thin Film Transistors (TFT) are attached to each RGB, (red/green/blue) pixel to provide more control over the color being reproduced. This method helps reduce display “white-wash” associated with a conventional passive-matrix screen, and helps to ensure optimal picture quality.

By employing a “striped pixel configuration” to align RGB pixels into columns, we can use more pixels to enhance details and provide better color definition. Having the controls for brightness on the front panel allows easy adjustment of picture quality.

LCD Display Resolution

Clarions in-dash 7" LCD displays feature a screen resolution of 1440 x 234 pixels for a total of 336,960 pixels. Some companies try and confuse you by describing the number of picture elements - each of the red, green and blue picture elements. By their standards, these units would have 1,010,880 picture elements. When comparing video displays, make sure the specifications you are comparing are using the same format.

Design & Interface Technologies

HMI Concept

Clarion has long been considered the industry leader in the development and implementation of advanced Human Machine Interface designs and concepts. Back in 2006, Clarion took the HMI concept to the next level and made it the focus of the companies products. HMI refers to the interaction, interconnection and interdependance of man, music and machine - all while being easy to use.

Slidetrak

Back for 2008 is the Slidetrak interface. Slidetrak ushered in a new era in source unit operation and control, making it easier and safer to use than ever before.

The large acrylic panel that covers the LCD display on the DXZ585USB and DXZ785USB now serves as your Seek Up and Seek Down (and tracking function) control. This panel (known as the Seek Panel) slides to the left and right to perform these functions. The days of searching for tiny little tracking and seek buttons is gone.

A significant benefit to the end user of Slidetrak is ease of use. With the source unit installed in their vehicle, no longer do they need to take their eyes off the road to change tracks or radio stations. Simply 'poke' at the center of the radio, and your are on to new musical experience.

Metal Shark Interface

Clarion isn't satisfied to sit idly by and watch the world go by. We are industry leaders in the development of new HMI interfaces. One of the most distinctive interfaces to come to the mobile electronics industry is the Metal Shark Interface.

Found on the FB275BT and FB275BTB, the Metal Shark interface takes its look from the gills of the great white shark. These units feature edge lit buttons and metallic center section with a vacuum fluorescent display and centrally located volume control.

The FB275BT and FB275BTB break all stereotypes and define the next evolution of source unit design.

728 Color Illumination

Intergration with your car means more than simply connecting to your speaker wires - it includes control and cosmetics. Clarions 728 color illumination allows you to match the radio illumination to the factory illumination in your car. Not only does this mean your radio sounds better than the one that came from the factory, but now it looks better too!

728 Color illumination can be found on the DXZ785USB, FB275BT, FB275BTB, UDB275MP and DFZ675MC source units.

Touch Panel Operation

Ease of use and intuitive operation are behind our LCD touch panel operation - found on the VRX785BT, VRX585USB, VRX485USB, MAX685BT and MAX385VD. Source selection and control, setup menus and more are accessible by a simple touch of your finger.

Add to that the ability to navigate through DVD on-screen menus by simply touching the menu item, and using your multimedia source unit is as easy as can be.

Dimmer Input

Safety comes in many forms - but being able to concentrate on your driving is a fundamental part of the HMI concept. Driving at night adds an additional level of complexity. To make it as easy as possible, Clarion includes a dimmer input wire on many of our source units. When connected to the factory dash illumination circuit, a signal on this wire causes the deck to reduce the brightness of the radio display, preventing it from being a distraction. Safety in the form of simplicity.

ISO Mount Capability

A product designed for easy installation makes sense, not only for the staff performing the installation, but for the end user as well. When a radio looks like it belongs in the dash, all the experiences surrounding its operation just seem better.

Clarion 1-DIN source units are capable of being isntalled in ISO Mount Fashion. This means, no trim ring is required to install the radio or to have its detachable control panel function properly and be removeable.

ISO mounting typically means that factory style brackets are to be used. Clarion source units feature industry standard mounting holes on the side of the radio that align perfectly with these brackets. This reduces installation time and improves the look of the final product.

Many new install kits make use of this ISO mounting technique, allowing radios to be installed so they look like they belong.

An example of ISO Mounting taken to the next level.

Design & Interface Technologies

Message Info

Personalization is always on our minds - we want the right clothes, the right car and the right music to match our personal style. Clarion knows this, and has included the Message Info option as one of the screen savers on our source units. Users can enter a message, up to 30 characters in length, and have it scroll across the screen.

Instant Station Recall (ISR)

Getting to where you want to go should always be as easy as simply pressing a button. When it comes to your favorite radio station, ISR has you covered. Tune in your favorite radio station, then press and hold the ISR button. You can choose AM or FM - it doesn't care. Now, any time you want, no matter what source you are listening to, a simple tap of the ISR will return you the programmed radio station.

This is a great feature to use on all-news radio stations when you want up-to-the-minute traffic reports.

Key Off Eject

Have you ever forgotten to bring your favorite CD into the house after arriving home from a trip. With Clarion's Key Off Eject feature - the disc eject function works, even when the ignition isn't turned on. Press eject and the disc pops out.

Last Position Memory

As CD players started to become popular, many people started to experience inherent drawbacks of this random access storage media. With a cassette tape - it stays where you left it when you shut off the power. Then, when you turn it back on, playback resumes from that same point. With Clarion's Last Position Memory - the same is true for your CD player. Turn the car off, do your shopping, then get back in. Your music picks up where you left off.

Amp Canceller

Taking your audio system to the next level often involves the installation of one or more external amplifiers. If your entire system is being powered by external amplifiers, simply enable the Amp Canceller feature on your head unit. When Amp Canceller is engaged, power to the internal amplifier IC is turned off. This reduces the current draw of the source unit and improves its sonic performance.

Multimedia

Multimedia

MAX685BT

2-DIN DVD MULTIMEDIA STATION WITH TOUCH PANEL CONTROL

- Motorized sloping control panel with 7-inch QVGA Colour LCD touch sensitive display
- DVD-Video, DVD, DVD±R/W, CD, CD-R/RW ready
- MP3/WMA/AAC Compatible with ID3-TAG display
- Official DivX® Certified product
- Plays all versions of DivX® video (including DivX® 6) with standard playback of DivX® media files
- Rear USB connector
- USB WMDRM10 compatible
- Built-in Bluetooth® Hands-free (HFP & OPP) and Audio Streaming (A2DP & AVRCP)
- Direct USB iPod Audio
- iPod Video Ready (CCA723 Required)
- XM® Mini-Tuner Direct Connection Ready
- CeNET Control of HDD Navigation (NAX980HD/ NAX970HD)
- RGB input for navigation
- 2-Zone entertainment: Front and Rear independent source control
- Built-in LPF/HPF
- Subwoofer level control
- 24-Bit D/A converter
- 3-band parametric equalizer
- MAGNA BASS EX
- 6 ch RCA output and 2 ch RCA output for 2-Zone
- 1 AUX AV input (2 ch Audio + Video)
- Rear-view Camera input
- 50 W × 4 MOS-FET Amplifier
- DSP AM/FM Tuner w/ 18 FM/6AM presets
- Optional 3rd party OEM Steering Wheel Remote Ready
- Built-in IR Eye (RCB198 Remote Control Included)

General Specifications	
Power Requirement:	10.8 - 15.6 V
Current Consumption:	4.0A
Weight:	2.6kg
Dimensions (w x h x d):	7" x 3-15/16" x 6-5/16"
DVD Specifications	
Frequency Response:	20Hz - 20kHz
S/N Ratio:	100 dB (1kHz)
Dynamic Range:	100 dB (1 kHz)
Distortion:	0.006%
Audio Input/Output Specifications	
Audio Input Voltage:	130 mVrms (Low)
Audio Input Voltage:	600 mVrms (Med)
Audio Input Voltage:	840 mVrms (High)
Audio Output Voltage:	2.0V
Audio Output Impedance:	330 Ohms
Video Input Voltage:	1.0 Vp-p @ 75 Ohms
Video Output Voltage:	1.0 Vp-p at 75 Ohms
LCD Screen Specifications:	
Screen Size:	7" Wide Type
Pixels:	336,960
Resolution:	1440 x 234
Audio Amplifier Specifications	
Rated Power Output:	20W x 4 CEA-2006
Maximum Power Output:	50W x 4
Minimum Speaker Impedance:	4 Ohms
FM Tuner Specifications:	
Frequency Range:	87.9 MHz - 107.9 MHz
Usable Sensitivity:	9 dBf
50dB Quieting:	15 dBf
Alternate Channel Selectivity:	70 dB
Stereo Separation:	32 dB (1kHz)
Frequency Response:	30Hz to 15kHz
AM Tuner Specifications:	
Frequency Range:	530 kHz to 1710 kHz
Useable Sensitivity:	28dBuV
iPod Interface Cables:	
Audio only:	Direct USB
Video and Audio:	CCA723

MAX385VD

2-DIN DVD MULTIMEDIA STATION WITH TOUCH PANEL CONTROL

- 6.5-inch QVGA Colour LCD Monitor
- Touch Panel Control
- DVD-Video, DVD, DVD±R/W, CD, CD-R/RW Ready
- MP3/WMA Compatible with ID3-TAG Display
- 18 FM / 6 AM Station Presets
- Phone Mute
- iPod® Direct Connection and Control (Optional CCUIPOD1 Cable required)
- Sirius®SSP Direct Connection Ready
- 24-Bit D/A Converter
- 6 ch RCA Output (Front + Rear +Subwoofer)
- 40 W × 4 Built-in Amplifier
- Rotary Volume Control
- Built-in IR Eye and Remote Control Included
- Rear Audio and Visual Input
- Rear AV Output
- Low-Pass Filter & Sub Level Control

General Specifications	
Power Requirement:	10.8 - 15.6 V
Current Consumption:	4.0A
Weight:	2.6kg
Dimensions (w x h x d):	7" x 3-15/16" x 6-5/16"
DVD Specifications	
Frequency Response:	20Hz - 20kHz
S/N Ratio:	100 dB (1kHz)
Dynamic Range:	100 dB (1 kHz)
Distortion:	0.006%
Audio Input/Output Specifications	
Audio Input Voltage:	130 mVrms (Low)
Audio Input Voltage:	600 mVrms (Med)
Audio Input Voltage:	840 mVrms (High)
Audio Output Voltage:	2.0V
Audio Output Impedance:	330 Ohms
Video Input Voltage:	1.0 Vp-p @ 75 Ohms
Video Output Voltage:	1.0 Vp-p at 75 Ohms
LCD Screen Specifications:	
Screen Size:	7" Wide Type
Pixels:	336,960
Resolution:	1440 x 234
Audio Amplifier Specifications	
Rated Power Output:	19W x 4 CEA-2006
Maximum Power Output:	50W x 4
Minimum Speaker Impedance:	4 Ohms
FM Tuner Specifications:	
Frequency Range:	87.9 MHz - 107.9 MHz
Usable Sensitivity:	9 dBf
50dB Quieting:	15 dBf
Alternate Channel Selectivity:	70 dB
Stereo Separation:	32 dB (1kHz)
Frequency Response:	30Hz to 15kHz
AM Tuner Specifications:	
Frequency Range:	530 kHz to 1710 kHz
Useable Sensitivity:	28dBuV
iPod Interface Cables:	
iPod Video cable (Audio and Video)	CCA691

Multimedia

VRX785BT

1-DIN DVD MULTIMEDIA STATION WITH TOUCH PANEL CONTROL

- Motorized Flip-out control panel with 7-inch QVGA Colour LCD touch sensitive display
- DVD-Video, DVD, DVD±R/W, CD, CD-R/RW ready
- MP3/WMA/AAC Compatible with ID3-TAG display
- Official DivX® Certified product
- Plays all versions of DivX® video (including DivX® 6) with standard playback of DivX® media files
- Rear USB connector
- USB WMDRM10 compatible
- Built-in Bluetooth® Hands-free (HFP & OPP) and Audio Streaming(A2DP & AVRCP)
- Direct USB iPod Audio
- iPod Video Ready (CCA723 Required)
- XM® Mini-Tuner Direct Connection Ready
- CeNET Control of HDD Navigation (NAX980HD/ NAX970HD) • RGB input for navigation
- 2-Zone entertainment: Front and Rear independent source control
- Built-in LPF/HPF
- Subwoofer level control
- 24-Bit D/A converter
- 3-band parametric equalizer
- MAGNA BASS EX
- 6 ch RCA output and 2 ch RCA output for 2-Zone
- 1 AUX AV input (2 ch Audio + Video)
- Rear-view Camera input
- 50 W × 4 MOS-FET Amplifier
- DSP AM/FM Tuner w/ 18 FM/6AM presets
- Optional 3rd party OEM Steering Wheel Remote Ready
- Built-in IR Eye (RCB198 Remote Control Included)

General Specifications	
Power Requirement:	10.8 - 15.6 V
Current Consumption:	4.0A
Weight:	2.4kg
Dimensions (w x h x d):	7" x 1-15/16" x 6-1/2"

DVD Specifications	
Frequency Response:	20Hz - 20kHz
S/N Ratio:	75 dbA (1 Watt Ref)
Dynamic Range:	100 dB (1 kHz)
Distortion:	0.01%

Audio Input/Output Specifications	
Audio Input Voltage:	130 mVrms (Low)
Audio Input Voltage:	600 mVrms (Med)
Audio Input Voltage:	840 mVrms (High)
Audio Output Voltage:	2.0V
Audio Output Impedance:	330 Ohms
Video Input Voltage:	1.0 Vp-p @ 75 Ohms
Video Output Voltage:	1.0 Vp-p at 75 Ohms

LCD Screen Specifications:	
Screen Size:	7" Wide Type
Pixels:	336,960
Resolution:	1440 x 234

Audio Amplifier Specifications	
Rated Power Output:	19W x 4 CEA-2006
Maximum Power Output:	50W x 4
Minimum Speaker Impedance:	4 Ohms

FM Tuner Specifications:	
Frequency Range:	87.9 MHz - 107.9 MHz
Usable Sensitivity:	9 dBf
50dB Quieting:	15 dBf
Alternate Channel Selectivity:	70 dB
Stereo Separation:	35 dB (1kHz)
Frequency Response:	30Hz to 15kHz)

AM Tuner Specifications:	
Frequency Range:	530 kHz to 1710 kHz
Useable Sensitivity:	28dBuV

iPod Interface Cables:	
Audio only:	Direct USB
Video and Audio:	CCA723

VRX585USB

1-DIN DVD MULTIMEDIA STATION WITH 7-INCH TOUCH PANEL CONTROL

- Fully Motorized 7-inch TFT Colour LCD Monitor
- Touch Panel Control
- DVD, DVD±R/W, CD, CD-R/RW ready
- MP3 and WMA and iTunes® AAC (only USB) Compatible with ID3-TAG display
- Official DivX® Certified product
- Plays All Versions of DivX® Video (including DivX® 6) with Standard Playback of DivX® Media Files
- Rear USB Connector
- iPod Direct Connection and Control (Optional CCA691 Cable Required)
- Shock Proof Memory
- 24-Bit D/A Converter
- Subwoofer Level Control
- 2-Zone Entertainment: Front and Rear Independent Source Control
- Z-Enhancer Plus sound customization
- 2-band Parametric Equalizer
- MAGNA BASS EX
- Built-in LPF/HPF
- Built-in Amplifier Canceller
- 18 FM/12 AM Presets
- 50W×4 MOS-FET Amplifier
- Adjustable Display Brightness
- A/V Input with Level Control
- 6ch RCA Output
- Optional 3rd party OEM Steering Wheel Remote Ready
- Bluetooth® Interface Ready (Optional BLT370)
- Detachable Control Panel

General Specifications	
Power Requirement:	10.8 - 15.6 V
Current Consumption:	4.0A
Weight:	2.4kg
Dimensions (w x h x d):	7" x 1-15/16" x 6-1/2"
DVD Specifications	
Frequency Response:	20Hz - 20kHz
S/N Ratio:	75 dbA (1 Watt Ref)
Dynamic Range:	100 dB (1 kHz)
Distortion:	0.01%
Audio Input/Output Specifications	
Audio Input Voltage:	130 mVrms (Low)
Audio Input Voltage:	600 mVrms (Med)
Audio Input Voltage:	840 mVrms (High)
Audio Output Voltage:	2.0V
Audio Output Impedance:	330 Ohms
Video Input Voltage:	1.0 Vp-p @ 75 Ohms
Video Output Voltage:	1.0 Vp-p at 75 Ohms
LCD Screen Specifications:	
Screen Size:	7" Wide Type
Pixels:	336,960
Resolution:	1440 x 234
Audio Amplifier Specifications	
Rated Power Output:	19W x 4 CEA-2006
Maximum Power Output:	50W x 4
Minimum Speaker Impedance:	4 Ohms
FM Tuner Specifications:	
Frequency Range:	87.9 MHz - 107.9 MHz
Usable Sensitivity:	9 dBf
50dB Quieting:	15 dBf
Alternate Channel Selectivity:	70 dB
Stereo Separation:	35 dB (1kHz)
Frequency Response:	30Hz to 15kHz)
AM Tuner Specifications:	
Frequency Range:	530 kHz to 1710 kHz
Useable Sensitivity:	28dBuV
iPod Interface Cable:	
iPod Video cable (Audio and Video)	CCA691

Multimedia

VRX485VD

1-DIN DVD MULTIMEDIA STATION WITH 7-INCH TOUCH PANEL CONTROL

- Fully Motorized 7-inch QVGA Colour LCD Monitor
- Touch Panel Control
- DVD-Video, DVD, DVD±R/W, CD, CD-R/RW ready
- MP3/WMA Compatible with ID3-TAG Display
- 18 FM / 6 AM Station Presets
- iPod® Direct Connection and Control (Optional CCUIPOD1 Cable Required)
- Seek Manual Up/Down
- Adjustable Display Brightness
- Display Tilt Angle: 5 Positions
- Sirius® SSP Direct Connection Ready
- 24-Bit D/A Converter
- RCA Visual Input
- 6ch RCA Output
- 40 W × 4 Amplifier
- Built-in IR Eye and Remote Control Included
- Low-Pass Filter & Sub Level Control

General Specifications	
Power Requirement:	10.8 - 15.6 V
Current Consumption:	4.0A
Weight:	2.4kg
Dimensions (w x h x d):	7" x 1-15/16" x 6-1/2"
DVD Specifications	
Frequency Response:	20Hz - 20kHz
S/N Ratio:	75 dbA (1 Watt Ref)
Dynamic Range:	100 dB (1 kHz)
Distortion:	0.01%
Audio Input/Output Specifications	
Audio Input Voltage:	130 mVrms (Low)
Audio Input Voltage:	600 mVrms (Med)
Audio Input Voltage:	840 mVrms (High)
Audio Output Voltage:	2.0V
Audio Output Impedance:	330 Ohms
Video Input Voltage:	1.0 Vp-p @ 75 Ohms
Video Output Voltage:	1.0 Vp-p at 75 Ohms
LCD Screen Specifications:	
Screen Size:	7" Wide Type
Pixels:	336,960
Resolution:	1440 x 234
Audio Amplifier Specifications	
Rated Power Output:	19W x 4 CEA-2006
Maximum Power Output:	50W x 4
Minimum Speaker Impedance:	4 Ohms
FM Tuner Specifications:	
Frequency Range:	87.9 MHz - 107.9 MHz
Usable Sensitivity:	9 dBf
50dB Quieting:	15 dBf
Alternate Channel Selectivity:	70 dB
Stereo Separation:	35 dB (1kHz)
Frequency Response:	30Hz to 15kHz)
AM Tuner Specifications:	
Frequency Range:	530 kHz to 1710 kHz
Useable Sensitivity:	28dBuV
iPod Interface Cable:	
iPod Video cable (Audio and Video)	CCA691

VRX385USB

1-DIN DVD MULTIMEDIA STATION WITH 3.5-INCH DISPLAY

- Motorized Sloping Control Panel with 3.5-inch TFT Colour LCD Monitor
- DVD, DVD±R/W, CD, CD-R/RW Ready
- MP3, WMA and iTunes® AAC (via USB) Compatible with ID3-TAG Display
- Official DivX® Certified Product
- Plays All Versions of DivX® Video (Including DivX® 6) with Standard Playback of DivX® Media Files
- Rear USB Connector
- 50 W x 4 MOS-FET Amplifier
- iPod® Direct Connection and Control (Optional CCA691 Cable required)
- Shock Proof Memory
- 24-Bit D/A Converter
- Subwoofer Level Control
- 2-Zone Entertainment: Front and Rear Independent Source Control
- Z-Enhancer Plus sound customization
- 2-band Parametric Equalizer
- MAGNA BASS EX
- Built-in LPF/HPF
- Amplifier Canceler
- Adjustable Display Brightness
- Detachable Control Panel
- A/V Input with Level Control
- 6 ch / 2V RCA Output
- 18 FM/12 AM Presets
- CCD Camera RCA Input
- Optional 3rd party OEM Steering Wheel Remote Ready
- Bluetooth® Interface Ready (Optional BLT370)

General Specifications	
Power Requirement:	10.8 - 15.6 V
Current Consumption:	4.0A
Weight:	2.4kg
Dimensions (w x h x d):	7" x 1-15/16" x 6-1/2"

DVD Specifications	
Frequency Response:	20Hz - 20kHz
S/N Ratio:	75 dbA (1 Watt Ref)
Dynamic Range:	100 dB (1 kHz)
Distortion:	0.01%

Audio Input/Output Specifications	
Audio Input Voltage:	130 mVrms (Low)
Audio Input Voltage:	600 mVrms (Med)
Audio Input Voltage:	840 mVrms (High)
Audio Output Voltage:	2.0V
Audio Output Impedance:	330 Ohms
Video Input Voltage:	1.0 Vp-p @ 75 Ohms
Video Output Voltage:	1.0 Vp-p at 75 Ohms

LCD Screen Specifications:	
Screen Size:	3.5" Wide Type
Pixels:	336,960
Resolution:	1440 x 234

Audio Amplifier Specifications	
Rated Power Output:	19W x 4 CEA-2006
Maximum Power Output:	50W x 4
Minimum Speaker Impedance:	4 Ohms

FM Tuner Specifications:	
Frequency Range:	87.9 MHz - 107.9 MHz
Usable Sensitivity:	9 dBf
50dB Quieting:	15 dBf
Alternate Channel Selectivity:	70 dB
Stereo Separation:	35 dB (1kHz)
Frequency Response:	30Hz to 15kHz)

AM Tuner Specifications:	
Frequency Range:	530 kHz to 1710 kHz
Useable Sensitivity:	28dBuV

iPod Interface Cable:	
iPod Video cable (Audio and Video)	CCA691

Multimedia

VB475

AM/FM DVD RECEIVER

- DVD-R/RW. DVD+R/RW, CD-R/RW Ready
- MP3/WMA Compatible
- 18FM / 12AM presets
- 24-Bit D/A Converter
- 12-Character Dot Matrix LCD Display
- 6 Channel preamp output
- Subwoofer Level Control
- 45W x 4 Amplifier
- 2 Composite Video outputs
- IR Remote Control
- Detachable Control Panel

General Specifications	
Power Requirement:	10.5-15V
Power Supply:	DC, negative ground
Operating Current Consumption (MAX):	10A

Audio Specifications	
S/N Ratio	80 dB
Dynamic Range:	80 dB
Output Power:	25W x 4
Load Impedance	4 Ohms
THD	<1%
Input Level (max):	2V
Output Level (max):	2V
Video Input Level	1Vp-p at 75 Ohms

Tuner Specifications	
Useable FM Sensitivity:	20 dBu
FM Frequency response:	60 Hz - 14kHz
FM S/N Ratio	55 dB
AM Useable Sensitivity	36dBu
AM S/N Ratio	43dB

DVD Specifications	
Region Number:	1
S/N Ratio	90 dB
Dynamic Range:	90 dB
Distortion:	0.05%

VS755

1-DIN IN-DASH DVD/CD/MP3 PLAYER

- One-DIN In-Dash DVD Player
- Plays DVD Video, CD Audio, and MP3 Encoded CD-R/RW
- CD-R/CD-RW Playback
- Adjustable Audio Gain Controller
- 2 A/V inputs (including front panel)
- 1 A/V Output
- 24-Bit D/A Converter
- IR Remote Control
- ID3 Tag for MP3 Titles

General Specifications	
Power Requirement:	11-16V
Current Consumption:	Less than 3.0 A
Weight:	3.5 lb
Dimensions (w x h x d):	7" x 2" x 6-5/8"

DVD Specifications	
Format:	DVD-Video Disc (Two Layer, Two Side)
Video System:	Standard NTSC
Audio System:	MP3 I, MP3 II
Mounting Angle:	0 to +/- 30 degrees

Video Specifications	
Output Level:	1.0 V, 75 ohms
Video System:	16:9 Letter Box, 4:3 Pan Scan
Video Input Terminal:	0.5 - 2.0 V, 75 ohms

Audio Specifications	
Maximum Output:	1.0 V
Frequency Response:	20 Hz to 20 kHz
S/N Ratio (A-wtd):	85 dB
Separation:	>70 dB

VMA770

7" WIDE-SCREEN HEADREST COLOR LCD MONITOR

- Slim, Easy-Fit Universal Mounting Bracket (Included)
- TFT Active Matrix Display With 16:9/4:3 Format
- On-Screen Display (OSD)
- Two A/V Inputs
- Built-In Dual IR Audio Transmitter for (Optional) WH204 Headphones
- Built-In IR Receiver for pass-through
- Front Panel Controls for Power, Source, and Picture
- Auto Turn-On/Off with Ignition

Specifications

Power Requirement:	11-16V
Current Consumption:	0.6 A
Pixels:	336,960
Resolution:	1,440 x 234
Video input level (RCA)	1.0V p-p
Video Format	NTSC / PAL
LCD Type:	Colour TFT, Active Matrix
Screen Size:	7"
Weight:	350g
Dimensions (w x h x d):	7-1/8 x 5-3/16" x 1-1/16"
Mounting Dimensions:	8" x 6" x 1"

VMA5096

5" WIDE-SCREEN HEADREST COLOR LCD MONITOR

- Slim, Easy-Fit Universal Mounting Bracket (Included)
- TFT Active Matrix Display With 16:9/4:3 Format
- On-Screen Display (OSD)
- Two A/V Inputs
- Built-In Dual IR Audio Transmitter for (Optional) WH204 Headphones
- Built-In IR Receiver for pass-through
- Front Panel Controls for Power, Source, and Picture
- Auto Turn-On/Off with Ignition

Specifications

Power Requirement:	11-16V
Current Consumption:	0.6 A
Pixels:	211,200
Resolution:	960 x 234
Video input level (RCA)	1.0V p-p NTSC
Video Format	NTSC / PAL
LCD Type:	Colour TFT, Active Matrix
Screen Size:	5"
Weight:	300g
Dimensions (w x h x d):	5-3/8" x 4-1/8" x 1-1/16"
Mounting Dimensions:	7-1/8" x 5-3/8" x 1"

Multimedia

OHM1575VD

15.4" OVERHEAD ENTERTAINMENT CENTER

- 15.4" Active Matrix TFT LCD Display
- Integrated DVD / CD Mechanism
- Front Panel Controls
- Infrared Remote Control
- Infrared Audio Transmitter
- Slim Mounting Profile
- MPEG 1, 2 & 4 Compatible
- MP3 and WMA Playback
- 2 A/V Inputs
- 1 A/V Output
- Built-In LED Dome Light
- On Screen Menu Display
- Adjustable Display Modes: Wide / Normal
- 2 Sets IR Wireless headphones

General Specifications	
Power Requirement:	10-16V
Power Supply:	DC, negative ground
Operating Current Consumption:	<1.5A
Maximum Current Consumption:	<2.0A
Video System:	NTSC and PAL
Video Signal:	1.0Vp-p, 75-Ohm Load
Resolution:	1024 x 768
Viewing Angle (up/down/left/right):	10/30/40/40
Display Swivel Angle:	0-180 degrees
Operating Temperature:	-5 - 55 degree C
Storage Temperature:	-20 - 70 degrees C
Dome Light Power:	2 Watts

Physical Specifications	
Dimensions (closed):	15.25" x 13.75" x 2.5"
Dimensions (open):	15.25" x 13.75" x 13"
Weight:	6.1 Lbs

Replacement Headphones:	WH114H

OHM1075VD

10.2" OVERHEAD ENTERTAINMENT CENTER

- 10.2" Active Matrix TFT LCD Display
- Integrated DVD / CD Mechanism
- Front Panel Controls
- Infrared Remote Control
- Infrared Audio Transmitter
- Slim Mounting Profile
- MPEG 1, 2 & 4 Compatible
- MP3 and WMA Playback
- 2 A/V Inputs
- 1 A/V Output
- Built-In LED Dome Light
- On Screen Menu Display
- Adjustable Display Modes: Wide / Normal
- 2 Sets IR Wireless headphones

General Specifications	
Power Requirement:	10-16V
Power Supply:	DC, negative ground
Operating Current Consumption:	<1.5A
Maximum Current Consumption:	<2.0A
Video System:	NTSC and PAL
Video Signal:	1.0Vp-p, 75-Ohm Load
Resolution:	800 x 480
Viewing Angle (up/down/left/right):	45/65/65/65
Display Swivel Angle:	0-180 degrees
Operating Temperature:	-5 - 55 degree C
Storage Temperature:	-20 - 70 degrees C
Dome Light Power:	2 Watts

Physical Specifications	
Dimensions (closed):	11.1" x 9.625" x 2"
Dimensions (open):	11.1" x 9.625" x 8.75"
Weight:	5.0 Lbs

Replacement Headphones:	WH114H

OHM875VD

8.0" OVERHEAD ENTERTAINMENT CENTER

- 8" Active Matrix TFT LCD Display
- Integrated DVD / CD Mechanism
- Front Panel Controls
- Infrared Remote Control
- Infrared Audio Transmitter
- Slim Mounting Profile
- MPEG 1, 2 & 4 Compatible
- MP3 and WMA Playback
- 2 A/V Inputs
- 1 A/V Output
- Built-In LED Dome Light
- On Screen Menu Display
- Adjustable Display Modes: Wide / Normal
- IR Wireless headphone

General Specifications	
Power Requirement:	10-16V
Power Supply:	DC, negative ground
Operating Current Consumption:	<1.5A
Maximum Current Consumption:	<2.0A
Video System:	NTSC and PAL
Video Signal:	1.0Vp-p, 75-Ohm Load
Resolution:	800 x 480
Viewing Angle (up/down/left/right):	45/65/65/65
Display Swivel Angle:	0-180 degrees
Operating Temperature:	-5 - 55 degree C
Storage Temperature:	-20 - 70 degrees C
Dome Light Power:	2 Watts

Physical Specifications	
Dimensions (closed):	10.375" x 8.875" x 1.75"
Dimensions (open):	10.375" x 8.875" x 7.75"
Weight:	4.4 Lbs

Replacement Headphones:	WH114H

SRK604

1-DIN CENTER CHANNEL SPEAKER WITH AMPLIFIER

- Compact speaker for 1-Din in-dash or Surface Mount Applications
- Two 30mm PEI parabolic dome midrange drivers
- One 20mm PEI parabolic dome tweeter
- 40W Amplifier
- Front panel level control
- Front panel pass-through subwoofer level control

General Specifications	
Power Requirement:	DC14.4V
Current Consumption:	2.5A

Amplifier Specifications	
Frequency Response:	20 Hz to 50 kHz
Signal to Noise Ratio:	85 dB
Distortion:	0.05%
Power Output (JEITA):	40W
Power Output (1kHz, 1%):	20W
Input Sensitivity:	300mV - 7.5V
Dimensions (mm):	152 x 25 x 68
Weight:	330g

Speaker Specifications	
Max Power Handling:	50W
Continuous Power Handling:	20W
Efficiency:	92dB
Frequency response:	200Hz - 35kHz
Dimensions (mm):	171 x 47 x 29
Weight:	190g

VA700

VIDEO DISTRIBUTION AMPLIFIER

- 1 Composite Video input
- 7 Composite Video outputs

General Specifications	
Power Requirement:	10.8 - 15.6V
Power Supply:	DC, negative ground
Maximum Current Consumption:	240 mA
Max Power Consumption:	3.3W
Video Signal:	1.0Vp-p, 75-Ohm Load
Bandwidth:	5Hz - 10 MHz
Physical Specifications	
Dimensions:	5/6" x 5-1/8" x 3-1/4"

MSS430

SOURCE COMMANDER A/V SWITCHER

- 3 A/V inputs
- 4 A/V outputs
- 3 Wired Control Stations
- Rear Camera reverse trigger input

General Specifications	
Power Requirement:	11 - 16V
Power Supply:	DC, negative ground
Maximum Current Consumption:	1.6 A
Audio Specifications	
Frequency Response:	30Hz - 25kHz
S/N Ratio:	60dB
Video Specifications	
Output Level:	1.0Vp-p
Frequency Response:	39Hz - 5.5 MHz
Video Gain:	0dB (+/- 2dB)
Input Impedance:	75 Ohm
Physical Specifications	
Dimensions (main unit):	9.84" x 1.06" x 5.24"
Dimensions (Control Station)	2.6" x 1.7" x 0.60"
Control station mounting hole:	1.9" x 2.8"

TTX005

STAND ALONE TV TUNER

- IR Remote Control
- Plug-In IR Remote Receiver
- Stereo Audio Output
- Composite Video Output
- 4-Channel Diversity Antenna Input
- Requires External Antenna(e)

Specifications

Power Requirement:	11-16V
Current Consumption:	Less than 250 mA
Operational Temperature:	41 to 104 degrees F
Storage Temperature:	-4 to 140 degrees F

General Specifications

Video Output Level:	1.2 V
Audio Output Level:	140 mV
Channels Reception:	2 to 65
Antenna Input:	75 ohms (3.5 mm plugs)
Video System:	NTSC

Antenna is Required

ZCB-003:	Thru-Glass Mono-Pole Car TV Antenna
ZCB-301:	On-Glass Mono-Pole Car TV Antenna
ZCB-303:	On-Glass Mono-Pole Car TV Antenna

CK625E

REAR VISION COLOR CAMERA KIT

Kit Inlcudes:
- Reverse Image Color Camera (CC2011E)
- Camera Power Supply With Reverse Trigger Input (CAA185)
- 23' Weather Resistant Camera Cable (MF23RM)

CC1030E (Rear Vision Color Camera)
- Reverse Image Color Camera
- Wide-Angle Lens (115° Wide X 88° Vertical)
- Weather Resistant Aluminum Case
- Low Light Sensitivity (3 Lux)
- High Resolution 1/4" CCD Element
- 250,000 Pixel Count
- Waterproof Mini-Din Connection System
- Operating Temperature: -4°F - 140°
- Dimensions: 1 7/8" (W) X 1 3/8" (H) X 1 3/4" (D)

CAA-185 (Rear Vision Camera Power Supply)
- Selectable Full-Time Camera Operation
- Composite Video Output
- Dimensions: 3 5/8" (W) X 1 3/8" (H) X 2 (D)

MF23RM (23' Weather Resistant Camera Cable)
- 23' Weather Resistant Insulated Cable
- Waterproof Mini-DIN Connection System

Multimedia

FM200

FM MODULATOR

- 2-Channel RCA Audio Input
- On/Off Switch
- Input Level Control
- 2 Modulating Frequencies (88.7MHz & 89.1MHz)
- Motorola-Style Antenna input and output connectors

FM700W

WIRELESS FM MODULATOR

- 2-Channel RCA Audio Input
- On/Off Switch
- Input Level Control
- 8 Modulating Frequencies (see chart below)

	1	2	3	4
A	107.9	107.7	107.5	107.3
B	88.9	88.7	88.5	88.3

Wireless Headphones

WH104
IR Wireless Headphone System (Two Headphones and Transmitter)

WH114H
Replacement Headphone for Overhead Monitors and as WH104 Additional Headphones

WH204
2-Source Wireless IR headphone System

WH204H
Replacement headphone for the WH204 - including OHMD74 and OHMD102

WH105
RF Wireless headphone system

WH105H
Replacement headphone for WH105

Navigation

clarion
EZD580
780
1.11mi
23:20
18
0:28
New York
Grand Ave
clarion
Zoom
VALLEY VIEW ST
clarion
HDD
NAX980HD
HDD NAVIGATION SYSTEM

Navigation – EZD580

EZD580

TRANSPORTABLE NAVIGATION SYSTEM

Features

- 4.3” Color Monitor Touch Panel Control
- Built-in Bluetooth Hands-free (HFP) and Audio Streaming (A2DP & AVRCP)
- Coverage of Entire USA and Canada
- Easy to Use New Navigation Engine
- 12 Million Points of Interest with Icons
- FM RDS-TMC Traffic Service Ready (Optional NAVRDS and Subscription Required)
- TTS (Text to Speech) Announces Street Names
- 2GB Flash Memory (Map Data Pre-Loaded)
- SiRF GPS III Module with 20-channel GPS Receiver
- Built-in Loudspeaker
- USB 2.0 Connection for Updating and Charging
- Rechargeable Battery Lasts up to 4 Hours
- 2D and 3D Map Views
- Lane and Signpost Info
- Automatic Route Recalculation
- Simple Destination Input

Entertainment

- SD/MMC-Card Slot for MP3/WMA Playback and Supports SDHC (Up To 4GB Memory Card)
- JPEG Picture Viewer / Slideshow
- 3.5mm External Headphone Connector

Mobility

- Windshield / Dash Mount and Stylus Pen Included
- USB Cable and Car Charger Included

Specifications

Operating System:	Windows CE 5.0
Processor:	Samsung 2443 400MHz
	Built-in 64 MB RAM
	2GB Flash Memory
Storage Temperature:	-20~60ºC
SD/MMC Slot:	4GB SD Card max
Display Type:	4.3" TFT Touch screen
Display Resolution:	480 x 272 Color Transflective LCD with Touch Panel (Samsung)
Weight:	0.45 lbs

Dimensions:

No Cradle:	5-1/8" (W) x 3-1/2" (H) x 3/4" (D)

Accessories:

- NAVDC DC Power Adapter
- NAVMOUNT3 Suction Cup & Mounting Bracket
- NAVRDS Traffic Message Channel Module
  http://www.realtimetraffic.net

NAX980HD

CENET HDD NAVIGATION SYSTEM

- 40GB Built-in High Speed Hard Disk Drive
- Built-in Gyro Sensor
- Touch-screen Operation
- Navteq and Info USA Mapping Coverage of USA and Canada
- Comprehensive 10M Points of Interest Database
- Audible Voice Commands in 3 Different Languages (English / French / Spanish)
- Turn-by-Turn Voice Prompts
- Personalized 3D Frequent and Favorites menu
- 3D Menu and Junction View
- High Speed and Accurate Search
- Adaptive Route Learning
- Dedicated Central and Graphic Processing Unit
- Quick Route Calculation and Recalculation
- Quick Access to Shortcut menu
- Front Panel USB Port
- External GPS Antenna Included

Compatible with: MAX675VD, MAX675VDII, MAX685BT, VRX775VD, and VRX785BT
(Sold Separately)

Specifications:

GPS Antenna Mode:	Microstrip Flat
Antenna Impedance:	50 ohm
GPS receiving frequency:	1575.42 MHz, C/A Code
Sensitivity:	-130 dBm or better
	15 GPS Channels
Voice synthesis:	ADPCM
Sampling frequency;	11.025 kHz
Power Supply voltage:	DC 14V
Ground:	Negative
Current Consumption:	Less than 3.0 A

Dimensions:

Main unit:	205 (W) x 29.5 (H) x 169 (D) mm
Antenna:	30.4 (W) x 11.7 (H) x 35.5 (D) mm

Required Connections:

Power and Ground
GPS Antenna (supplied)
CeNET
Vehicle Speed Sensor (VSS)
Parking Brake
Reverse Light

Navigation

Clarion Navigation

Clarion has long been considered a world leader in the development of mobile navigation systems. From the revolutionary Auto PC and Joyride to the EZD580 and NAX - Clarion's navigation products have always stood out in the crowd, offering features and performance second to none.

EZDrive is the epitome of our HMI slogan, integrating Man, Music and Machine into a friendly, easy to use package.

Portable Navigation - EZD580

Portability

The EZD580 sets a new standard for portable navigation. The EZD580 is fully portable with a built-in Lithium Ion battery cell and integrated 20-channel SiRF III GPS receiver. You can use it in your car, on your bike or even in your hands as you walk down the street.

Speed

The EZD580 features a 400 MHz RISC CPU, the Microsoft Windows CE NET 5.0 Core operating system and 2GB of on-board flash memory . This means that entering your destination and making route calculations is blazingly fast. Even map scrolling and zooming is taken to a new level of speed and accuracy.

Interface

A 4.3-inch TFT LCD display combined with a touch screen overlay makes viewing and working with your EZD580 is easier than ever. We've even include a stylus to make entering data entry quicker and easier. The EZD580 even has a place to store the stylus when not in use. Day and Night modes make viewing the EZD580 bright and clear during the day, but not distracting at night. Turn by Turn voice prompts provide all the information you need - and it works in English, French and Spanish.

Configurable

The EZD580 does what you want, the way you want it. You can tilt the map to view it in 3D mode, tell it to avoid toll roads or plot a route with multiple way points. The ability to make the EZD580 look and behave the way you want is nearly endless.

Bluetooth

The EZD580 features a Bluetooth 2.0 interface to make hands-free cell phone operation easy. You can even dial your phone from the EZD580 and communicate through it's built-in microphone.

Quick Setup

The EZD580 ships with a windshield mounting bracket, a suction cup mounting plate and a car charger. Put the EZD580 in place and power it up - that's all it takes get you out on the road and headed to your destination.

Audio Player

The EZD580 includes an advanced audio player, ready to bring your MP3 files to life. The player includes a built-in equalizer and athe provided headphone jack means that your EZD580 can also be your portable media player. Simply copy your MP3 files to an SD or MMC card, pop it in and enjoy.

Picture Viewer

Do you have a digital camera? Want to show your friends the pictures from your last vacation or the car show you went to on the weekend? Pop the SD card out of your camera and slide it into the EZD580 and let the slideshow do the rest for you. The high resolution LCD will bring your pictures to life.

Open Architecture

The EZD580 and its operating system were built on a fully upgradeable platform. As new maps or software updates become available, you can load them via the SD card slot or via the USB 1.1 port on the bottom.

Convenience

The EZD580 includes a mini-USB car charger or can be charged by plugging it into the USB port of your computer.

The Suction Cup Mounting Solution

All your customer needs to do is pick a location on the windshield. Stick the suction cup to the desired location, press the air-release button, and then pull back the small lever to lock the mount into place. This mount also offers two adjustment points, allowing users to easily dial in the correct angle.

You can move EZD580 from one car to another and be on the road in less time than it takes to fill your cars gas tank.

Built-In Speaker

EZD580 is built-in speaker certainly is a convenient feature, especially when you're on the road. The built-in speaker can also be used to entertain the driver and passenger while back seat passengers enjoy a video entertainment system. The speaker can also be used to hear voice prompts during navigation when the vehicle's existing stereo system is in use.

Built-In GPS Antenna

EZD580 is truly ready to go right out of the box. The EZD580 offers an internal antenna. No need to fumble with wires, just plug it in, mount it to your windshield and go.

Clarion In-Dash Navigation

The face of in-dash navigation has changed forever with the introduction of the NAX980HD Hard Disk Drive Navigation System. This system is based on our revolutionary 3D mapping system that has won several awards in the Asia.

Raw Power

The NAX980HD was designed from the ground up for only one task - to provide the best possible navigation accuracy, speed and detail of any navigation system at any price.

Part of the secret behind the speed of the NAX980HD is its on-board 3D Graphics processor. Unlike conventional all-in-one navgiation systems, the NAX980HD doesn't generate the graphics on the main CPU. This leaves the main CPU free to do route updates and calculations, while detailed and smooth graphics are generated by an on-board 3D Graphics Processing Unit and transmitted to either the Many of our Multimedia Source Units via a dedicated RGB video connection.

Information is stored on the NAX980HD on a 40GB mobile hard disk drive. This isn't the same drive in your laptop. It was designed to withstand the toughest challenges the mobile environment can throw at it.

Personalization

From the ability to upload new wallpaper themes to the NAX980HD (downloadable from www.clarion.com) to all the different route calculation options. The NAX980HD will get you were you want to go. Want to avoid toll roads or highways alltogether - just select the route planning options that suit your needs and go to town.

Ease of Use

From the predictive text entry to more than 10 Million Points of Interest - the NAX980HD does everyting it can to help you get to your destination. Should you stray from the planned route, instant route recalculations get you back on track - sometimes before you even know you made a wrong turn.

It Learns

The NAX980HD has the ability to learn your route preferences. If you have 'taken your way' instead of following the directions the NAX980HD provides several times, it will include your preferences in the route planning. Avoid those areas of traffic congestion or construction without lifting a finger.

The "favorites menu" lets you access all your common destinations in an uncommon way. This fully rendered 3D menu provides animated icons to make your selection even easier.

Looks Good

The high resolution 2D and 3D graphics displayed on your compatible MAX or VRX Multimedia Source Units are fully configurable to provide as much, or as little information as you desire. Upcoming turns, distance until next turn, ETA, Compass and more are just some of the options. The NAX980HD will even overlay audio information.

No Surprises

Thanks to turn-by-turn voice prompts, an event distance count-down meter and distance to next event displays, no turn, exit or lane change is going to sneak up on you. With the NAX980HD at your side, you can drive safely and confidently. Voice prompts are available in English, French and Spanish, as are the navigation menus.

True Integration

The NAX980HD is based on a navigation system designed for OEM use. This is part of what makes it so accurate, detailed and easy to use. The NAX980HD features an on-board Gyro sensor and inputs for VSS, parking brake and reverse light inputs. The combination of these features an a high-sensitivity GPS antenna ensure that the NAX980HD always knows where you are and which way you are pointed.

Source Units

Source Units - DB185MP/DB285USB

DB185MP

CD/MP3/WMA RECEIVER

- MP3/WMA Plaback with ID3 Tag Display
- Front Auxiliary Input with Level Control
- Bluetooth Ready (BLT370 Required)
- Sound Adjustment (Z-Enhancer / Magna Bass EX)
- 13 x 8 Digit High Visibility Dot Matrix Display
- CD-R/RW Compatible
- Screen Savers
- Rotary Volume Control
- 4-Channel / 2V RCA Preout
- 50 Watts x 4 Built-In amplifier
- Detachable Control Panel
- OEM Steering Wheel Remote Ready

Wire Harness	854-634-959
Replacement DCP	DCP606

Specifications

Power Supply Voltage	14.4VDC Negative Ground
Allowable Voltage:	10.8V to 15.6V
Current Consumption (Max)	15 Amps
Antenna output rated current	500mA
Maximum Power Output	50 Wrms x 4
CEA-2006 Power Output	21 Wrms x 4
Line Level Output Voltage	1.8 Vrms
CD Signal to Noise Ratio	87dBA 1W into 4 Ohms
CD Frequency Response	10Hz to 20KHz (±1dB)
CD Dynamic Range	87dB (1kHz)
Harmonic Distortion	0.01%
FM Frequency Range	87.9 MHz to 107.9 MHz
FM Frequency Response	30Hz to 15kHz
FM Usable Sensitivity	11 dBf
FM 50 dB Quieting Sensitivity	17 dBf
FM Stereo Separation	35 dB
AM Frequency Range	530 kHz to 1710 kHz
FM Usable Sensitivity	25 uV

DB285USB

CD/MP3/WMA RECEIVER WITH CENET

- MP3/WMA Plaback with ID3 Tag Display
- CeNET Control of DVD Changer, CD Changer, Satellite Radio and Advanced iPod Interface
- Front Auxiliary Input with Level Control
- Bluetooth Ready (BLT370 Required)
- Sound Adjustment (Z-Enhancer / Magna Bass EX)
- 13 x 8 Digit High Visibility Dot Matrix Display
- CD-R/RW Compatible
- Screen Savers
- Rotary Volume Control
- 4-Channel / 2V RCA Preout
- 50 Watts x 4 Built-In amplifier
- Detachable Control Panel
- OEM Steering Wheel Remote Ready
- Built-In IR Remote Eye (remote optional)

Wire Harness	854-634-959
Replacement DCP	DCP614

Specifications

Power Supply Voltage	14.4VDC Negative Ground
Allowable Voltage:	10.8V to 15.6V
Current Consumption (Max)	15 Amps
Antenna output rated current	500mA
Maximum Power Output	50 Wrms x 4
CEA-2006 Power Output	19 Wrms x 4
Line Level Output Voltage	1.8 Vrms
CD Signal to Noise Ratio	80dBA 1W into 4 Ohms
CD Frequency Response	5Hz to 20KHz (±1dB)
CD Dynamic Range	95dB (1kHz)
Harmonic Distortion	0.01%
FM Frequency Range	87.9 MHz to 107.9 MHz
FM Frequency Response	30Hz to 15kHz
FM Usable Sensitivity	9 dBf
FM 50 dB Quieting Sensitivity	15 dBf
FM Stereo Separation	35 dB
AM Frequency Range	530 kHz to 1710 kHz
FM Usable Sensitivity	25 uV

Source Units - DXZ385USB/DXZ585USB

DXZ385USB

CD/MP3/WMA RECEIVER WITH CENET

- MP3/WMA Playback with ID3 Tag Display
- CeNET Control of DVD Changer, CD Changer, Satellite Radio and Advanced iPod Interface
- Front Auxiliary Input with Level Control
- Bluetooth Ready (BLT370 Required)
- Built-In Electronic HPF/LPF Crossovers
- Sound Adjustment (Z-Enhancer / Magna Bass EX)
- 13 x 8 Digit High Visibility Dot Matrix Display
- CD-R/RW Compatible
- Screen Savers
- Rotary Volume Control
- 6-Channel / 2V RCA Preout
- 50 Watts x 4 Built-In amplifier
- Detachable Control Panel
- OEM Steering Wheel Remote Ready
- Built-In IR Remote Eye (remote optional)

Wire Harness	854-634-959
Replacement DCP	DCP615

Specifications

Power Supply Voltage	14.4VDC Negative Ground
Allowable Voltage:	10.8V to 15.6V
Current Consumption (Max)	15 Amps
Antenna output rated current	500mA
Maximum Power Output	50 Wrms x 4
CEA-2006 Power Output	19 Wrms x 4
Line Level Output Voltage	3.6 Vrms
CD Signal to Noise Ratio	80dBA 1W into 4 Ohms
CD Frequency Response	5Hz to 20KHz (±1dB)
CD Dynamic Range	95dB (1kHz)
Harmonic Distortion	0.01%
FM Frequency Range	87.9 MHz to 107.9 MHz
FM Frequency Response	30Hz to 15kHz
FM Usable Sensitivity	9 dBf
FM 50 dB Quieting Sensitivity	15 dBf
FM Stereo Separation	35 dB
AM Frequency Range	530 kHz to 1710 kHz
FM Usable Sensitivity	25 uV

DXZ585USB

CD/MP3/WMA/AAC RECEIVER WITH CENET

- "*SLIDETRAK*" HMI Interface
- MP3/WMA/AAC Playback with ID3 Tag Display
- Front Panel USB Port (support for up to 15,000 songs)
- CeNET Control of CD Changer, Satellite Radio
- Direct USB iPod Control
- 24-Bit D/A Converter
- Rear 2-CH RCA Auxiliary Input with Level Control
- Flip Down Detachable Control Panel
- Bluetooth Ready (BLT370 Required)
- Built-In Electronic HPF/LPF Crossovers
- Sound Adjustment (Digital Z-Enhancer / Magna Bass EX)
- Sound Restorer
- 2-Band Parametric Equalizer
- Digital AM/FM Tuner
- 13 x 8 Digit 2-Line High Visibility LCD Display
- CD-R/RW Compatible
- 6-Channel / 6V RCA Preout (with Subwoofer Control)
- 53 Watts x 4 Built-In amplifier
- OEM Steering Wheel Remote Ready
- Built-In IR Remote Eye - Remote Included
- 2 Year Waranty (If installed by an authorized Clarion dealer)

Wire Harness	854-634-959
Replacement DCP	DCP608

Specifications

Power Supply Voltage	14.4VDC Negative Ground
Allowable Voltage:	10.8V to 15.6V
Current Consumption (Max)	15 Amps
Antenna output rated current	500mA
Maximum Power Output	53 Wrms x 4
CEA-2006 Power Output	19 Wrms x 4
Line Level Output Voltage	5.7 Vrms
CD Signal to Noise Ratio	83dBA 1W into 4 Ohms
CD Frequency Response	5Hz to 20KHz (±1dB)
CD Dynamic Range	95dB (1kHz)
Harmonic Distortion	0.01%
FM Frequency Range	87.9 MHz to 107.9 MHz
FM Frequency Response	30Hz to 15kHz
FM Usable Sensitivity	9 dBf
FM 50 dB Quieting Sensitivity	15 dBf
FM Stereo Separation	35 dB
AM Frequency Range	530 kHz to 1710 kHz
FM Usable Sensitivity	25 uV

Source Units - DXZ785USB/DRZ9255

DXZ785USB

CD/MP3/WMA/AAC RECEIVER WITH CENET

- "*SLIDETRAK*" HMI Interface
- MP3/WMA/AAC Playback with ID3 Tag Display
- Rear USB Port (support for up to 15,000 songs)
- CeNET Control of CD Changer, Satellite Radio
- Direct USB iPod Control
- 24-Bit D/A Converter
- Rear 2-CH RCA Auxiliary Input with Level Control
- Motorized Flip Down Detachable Control Panel
- 728 Color Display and Button Illumination
- Bluetooth Ready (BLT370 Required)
- Advanced Electronic 2-way/3-way Crossovers
- 6-Channel Time Alignment Control with 23mm steps
- Sound Adjustment (Digital Z-Enhancer / Magna Bass EX)
- Sound Restorer
- 3-Band Parametric Equalizer
- Digital AM/FM Tuner
- High visibility Dot Matrix LCD Display
- CD-R/RW Compatible
- 6-Channel / 6V RCA Preout (with Subwoofer Control)
- 53 Watts x 4 Built-In amplifier
- OEM Steering Wheel Remote Ready
- Built-In IR Remote Eye - Remote Included
- 2 Year Waranty (If installed by an authorized Clarion dealer)

Wire Harness	854-634-959
Replacement DCP	DCP607
Specifications	
Power Supply Voltage	14.4VDC Negative Ground
Allowable Voltage:	10.8V to 15.6V
Current Consumption (Max)	15 Amps
Antenna output rated current	500mA
Maximum Power Output	53 Wrms x 4
CEA-2006 Power Output	20 Wrms x 4
Line Level Output Voltage	5.7 Vrms
CD Signal to Noise Ratio	84dBA 1W into 4 Ohms
CD Frequency Response	5Hz to 20KHz (±1dB)
CD Dynamic Range	95dB (1kHz)
Harmonic Distortion	0.01%
FM Frequency Range	87.9 MHz to 107.9 MHz
FM Frequency Response	30Hz to 15kHz
FM Usable Sensitivity	9 dBf
FM 50 dB Quieting Sensitivity	15 dBf
FM Stereo Separation	35 dB
AM Frequency Range	530 kHz to 1710 kHz
FM Usable Sensitivity	25 uV

DRZ9255

AM/FM CD PLAYER WITH CENET, TIME ALIGNMENT, PARAMETRIC EQ AND 4-WAY CROSSOVER

- Dual 24-Bit Burr Brown 96kHz 64x oversampling D/A converters
- Digital Time Alignment for each channel with 0.7cm (1/4") steps
- 4-Way electronic crossovers - 6, 12 or 18dB Slopes, bandpass on Sub, Low and Midrange outputs
- 5-Band Parametric Equalizer with presets
- 0.5dB/Step Burr Brown Zero-Crossing volume control
- CeNET Control of CD Changer, DVD Changer, TV Tuner and iPod Interface
- Copper Plated chassis for EFI Noise rejection
- 8-Volt, 8-channel Gold Plated preamp outputs with OFC cables
- Two Auxiliary inputs
- External 30V DC/DC converter power supply
- Fiber Optic input for CD/DVD changer
- Vacuum Fluorescent Display
- IR Remote Control
- MagiTune+ AM/FM Tuner
- Zinc Die-Cast Faceplate

Specifications	
Power Supply Voltage	14.4VDC Negative Ground
Allowable Voltage:	10.8V to 15.6V
Current Consumption (Max)	<5 Amps
Line Level Output Voltage	8.0 Vrms
CD Frequency Response	5Hz to 20KHz (±1dB)
Signal to Noise Ratio	112dB
CD Dynamic Range	100 dB
Harmonic Distortion	0.003% (20Hz to 20kHz)
FM Frequency Range	87.9 MHz to 107.9 MHz
FM Frequency Response	30Hz to 15kHz
FM Usable Sensitivity	9 dBf
FM 50 dB Quieting Sensitivity	15 dBf
FM Stereo Separation	35 dB
AM Frequency Range	530 kHz to 1710 kHz
FM Usable Sensitivity	25 uV

Source Units - FB275BTB/FB275BT/XA311

FB275BTB

FB275BT

BLUETOOTH SD/MP3 RECEIVER

- Built-in Bluetooth Interface (HSP, A2DP & AVRCP Profiles)
- SD Card Slot
- MP3 Playback via SD Card
- Detachable Flip Down Control Panel
- FM Receiver
- 2 Channel RCA Auxiliary Input with Level Control
- 2 Channel / 2V RCA Preout
- 200 Watts (50 Watts x 4)
- 3.5mm External Micro phone Connector

Wire Harness	854-634-959

Specifications (preliminary)

Power Supply Voltage	14.4VDC Negative Ground
Allowable Voltage:	10.8V to 15.6V
Current Consumption (Max)	15 Amps
Antenna output rated current	500mA
Maximum Power Output	50 Wrms x 4
CEA-2006 Power Output	17 Wrms x 4
Line Level Output Voltage	2.0 Vrms
FM Frequency Range	87.9 MHz to 107.9 MHz
FM Frequency Response	30Hz to 15kHz
FM Usable Sensitivity	11 dBf
FM 50 dB Quieting Sensitivity	17 dBf
FM Stereo Separation	35 dB
AM Frequency Range	530 kHz to 1710 kHz
FM Usable Sensitivity	25 uV

XA311

AM/FM CASSETTE PLAYER WITH CD CHANGER CONTROLLER AND DIN CHASSIS

- Magi-Tune Tuner with 20 FM/5 AM Presets
- Rotary Volume Control
- Z-Enhancer EQ Selector
- Green LCD Display
- C-Bus Changer Control
- 160 W Amplifier (40 W x 4)
- Auto Reverse

Wire Harness	854-634-950

Specifications

FM Useable Sensitivity	11 dB
FM 50 dB Quieting Sensitivity	17 dB
FM Alternate Channel Selectivity	75 dB
FM Stereo Separation	35 dB
FM Stereo Frequency Response	30 Hz to 15 kHz
Tape Wow and Flutter	0.08 %
Tape Channel Separation	45 dB
Tape Signal-to-Noise Ratio, Metal Tape, No Noise Reduction	58 dB
Tape Frequency Response, Metal Tape	30 Hz to 20 kHz
Maximum Power Output	40 W x 4
Continuous Power Output	14 W x 4

Optional Changer

DC625

Source Units - DFZ675MC/DUZ385SAT

DFZ675MC

CD/MP3/WMA 2-DIN RECEIVER WITH CENET CONTROL AND MUSIC CATCHER II

- Vacuum Fluorescent Display
- Plays CD, CD-R & CD-RW
- MP3 and WMA decoding with ID3 tag display
- CeNET control for DVD Changer (Easy), TV Tuner, 6-Disc CD Changer, Satellite radio tuner and iPod Interface.
- 728 Colour Display and Button Illumination
- 4-Channel 2-Volt RCA Output
- Front Panel 3.5mm Auxiliary Input
- Front Panel SD Card Slot
- Music Catcher II digital recorder with 4x record speed
- 200W MOSFET Amplifier (50W x 4)
- Digital Z-Enhancer
- Magna Bass EX
- Random Play, Intro Scan, Track Repeat
- Rotary Volume Control
- 18 FM/6 AM Presets
- Adjustable Display Contrast
- Built-In Amp Canceller
- IR Remote Control

Specifications

Maximum Power Output	50 Wrms x 4
CEA-2006 Power Output	19 Wrms x 4
Line Level Output Voltage	2.0Vrms
CD Signal to Noise Ratio	81dB 1W into 4 Ohms
CD Frequency Response	10Hz to 20KHz (±1dB)
CD Dynamic Range	95 dB
Harmonic Distortion	0.01%
FM Frequency Range	87.9 MHz to 107.9 MHz
FM Frequency Response	30Hz to 15kHz
FM Usable Sensitivity	9 dBf
FM 50 dB Quieting Sensitivity	15 dBf
FM Stereo Separation	35 dB
MP3 Formats	MPEG 1, 2 and 2.5-Layer 3

DUZ385SAT

CD/USB/MP3/WMA/AAC RECEIVER

- MP3 and WMA decoding with ID3 tag display
- Plays CD, CD-R & CD-RW
- USB Digital Media Streaming Capability
- Rear USB Connector
- Direct USB iPod Audio
- Front Panel 3.5mm Auxiliary Input
- Rotary Volume Control with Source Indicator
- 13 x 10 Digital 2-Line High Visibility LCD
- White Colour Display and Illuminated Keys
- Magna Bass EX, Z-Enhancer
- Z-Enhancer Plus Sound Customization
- 200W MOSFET Amplifier (50W x 4)
- 2-Channel 2-Volt RCA Output
- 18 FM/6 AM Presets
- OEM Steering Wheel Remote Ready
- Bluetooth Ready (BLT370 Required)
- Sirius Satellite Ready (K-SIRIUS Sold Separetly)
- XM Mini-Tuner Direct (Receiver Sold Separetly)
- IR Remote Control (Optional)

Specifications (preliminary)

Maximum Power Output	50 Wrms x 4
CEA-2006 Power Output	20 Wrms x 4
Line Level Output Voltage	2.0Vrms
CD Signal to Noise Ratio	79dB 1W into 4 Ohms
CD Frequency Response	10Hz to 20KHz (±1dB)
CD Dynamic Range	95 dB
Harmonic Distortion	0.01%
FM Frequency Range	87.9 MHz to 107.9 MHz
FM Frequency Response	30Hz to 15kHz
FM Usable Sensitivity	9 dBf
FM 50 dB Quieting Sensitivity	15 dBf
FM Stereo Separation	35 dB
MP3 Formats	MPEG 1, 2 and 2.5-Layer 3

Source Units – UDB275MP/ADB340MP

UDB275MP

CD/USB/MP3/WMA RECEIVER

- MP3 and WMA decoding with ID3 tag display
- Plays CD, CD-R & CD-RW
- Front USB Slot
- Front Panel 3.5mm Auxiliary Input
- Rotary Volume Control with Source Indicator
- High Visibilty Display with Screen Savers
- 728 Colour Display and Button Illumination
- Magna Bass EX, Z-Enhancer
- Z-Enhancer Sound Customization
- 200W MOSFET Amplifier (50W x 4)
- 2-Channel 2-Volt RCA Output
- 18 FM/6 AM Presets
- OEM Steering Wheel Remote Ready
- Bluetooth Ready (BLT370 Required)
- IR Remote Control

Specifications (preliminary)

Maximum Power Output	50 Wrms x 4
CEA-2006 Power Output	19 Wrms x 4
Line Level Output Voltage	2.0Vrms
CD Signal to Noise Ratio	79dB 1W into 4 Ohms
CD Frequency Response	10Hz to 20KHz (±1dB)
CD Dynamic Range	95 dB
Harmonic Distortion	0.01%
FM Frequency Range	87.9 MHz to 107.9 MHz
FM Frequency Response	30Hz to 15kHz
FM Usable Sensitivity	9 dBf
FM 50 dB Quieting Sensitivity	15 dBf
FM Stereo Separation	35 dB
MP3 Formats	MPEG 1, 2 and 2.5-Layer 3

ADB340MP

CD/MP3 CASSETTE PLAYER RECEIVER 2-DIN CHASSIS

- Flip-Down Faceplate
- Plays CD-R and RWs
- Plays MP3-Encoded CDs
- Full-Logic Cassette Player with Auto Reverse
- 3-Band Graphic EQ
- LCD With Spectrum Analyzer
- 2-Channel RCA Line-Level Output
- 2-Channel Auxiliary Input
- 200 W Amplifier (50 W x 4)
- Radio Tuner with 18 FM/6 AM Presets
- CD Text and CD Titling

Wire Harness	854-634-950

Specifications

FM Useable Sensitivity	11 dB
FM 50 dB Quieting Sensitivity	17 dB
FM Alternate Channel Selectivity	70 dB
FM Stereo Separation	35 dB
FM Stereo Frequency Response	30 Hz to 15 kHz
CD Signal-to-Noise Ratio	100 dB
CD Frequency Response	10 Hz to 20 kHz
CD Dynamic Range	95 dB
Tape Wow and Flutter	0.06 %
Tape Channel Separation	45 dB
Tape Signal-to-Noise Ratio, Metal Tape, Dolby B Noise Reduction	67 dB
Tape Frequency Response, Metal Tape	30 Hz to 20 kHz
Maximum Power Output	50 W x 4
Continuous Power Output	17 W x 4
Line-Level Output Voltage	1.8 V

Source Units – DCZ625/DC625 CD Changers

DCZ625

CeNET 6-DISC CD CHANGER

Features

- 6-Disc Magazine
- Plays CD-R/RW Discs
- CeNET Control
- Zero-Bit Detector Mute Circuit
- Horizontal or Vertical Mounting Capability
- Fiber-Optic Digital Output
- CD Text and CD Titling
- Magazine: CAA397

Specifications

CD Channel Separation . . . . . 85 dB
CD Signal-to-Noise . . . . . 100 dB
CD Frequency Response . . . . . .5 Hz to 20 kHz
CD Dynamic Range . . . . . 94 dB
Dimensions (h x l x d) . . . . . 2-1/2" x 9" x 6-5/8"

DC625

C-BUS 6 DISC CD CHANGER

Features

- 6 Disc Magazine
- Plays CD-R/RW Discs
- C-Bus Control
- Zero-Bit Detector Mute Circuit
- Horizontal or Vertical Mounting Capability
- Magazine: CAA397

Specifications

CD Channel Separation . . . . . 85 dB
CD Signal-to-Noise . . . . . 100 dB
CD Frequency Response . . . . . .5 Hz to 20 kHz
CD Dynamic Range . . . . . 94 dB
Dimensions (h x l x d) . . . . . 2-1/2" x 9" x 6-5/8"

Source Units – FMC250/Accessory Information

FMC250

FM MODULATOR/CD CHANGER CONTROL

FEATURES

- 12 FM Frequencies (switchable)
- C-Bus Control and communication
- Output Level Control
- IR Remote Control RCB131

Works with C-Bus changers only

CD Changer Magazines

CAA397
6-Disc Magazine for DCZ625, DC625, VCZ625

CAA355
6 Disc Magazine for CDC655TZ, CDC635, and XM655-RET

CAA134
3-Pack/One Each Red, White, and Blue
6-Disc Magazine for CDC1255Z and CDC1235

CAA122
One Black 6-Disc Magazine for CDC1255Z and CDC1235

CeNET Cables

CCA519
CeNet Y-Adapter for Multi-Changer Connection and iPod interface installation.

CCA520
8' CeNET CD Changer (Extension) Cable, Male-to-Female

CCA521
20.5" CeNET CD Changer (Extension) Cable, Male-to-Female

CAA561
16' CeNET CD Changer (Replacement) Cable, Male-to-Male

C-Bus Cables

CCA273
5' C-Bus Changer Cable, Male-to-Male

CCA306
20" C-Bus Changer Cable, Angle Male-to-Straight Female

CCA308
16’ C-Bus CD Changer (Extension) Cable, Male-to-Female

CCA329
16' C-Bus CD Changer (Replacement) Cable, Male-to-Male

CCA350
5' C-Bus CD Changer Cable, Angle Male-to-Angle Male

Satellite Radio

Sat Ready for 2008

New 2008 Clarion CeNET compatible source units are now SAT Radio ready. This means that you can choose from Sirius or XM Radio - giving you more than 200 different channels of entertainment to choose from.

How does Satellite Radio work?

Though the exact mechanism and placement of satellites varies between XM and Sirius, the concept is essentially the same. Both companies operate their own studios and program their own music. The broadcast is transmitted to a satellite (or satellites) orbiting above North America. The tuner in your car receives this digitally transmitted signal and provides you with more than 100 different choices of stations - many of which are commercial free. Both Sirius and XM are pay-for-use services.

K-SIRIUS - SIRIUS Satellite Radio Receiver

This package includes Clarion's **K-SIRIUS** receiver and Sirius Antenna and a CeNET cable. The receiver can be controlled using any CeNET-equipped source unit.

Features:

• CeNET interface for direct operation by all SIRIUS-Ready Clarion source units

• CeNET Pass-Through for Connection of CD Changers and any other Clarion CeNET products.

Sirius Marine Solutions

As the world leader in marine audio product design and production, Clarion takes enjoying satellite radio on the water to the next level with out marine specific Sirius Satellite Radio package.

K-SIRIUSM - SIRIUS Satellite Radio Receiver

This package includes Clarion's SC-C1 receiver, but does not include the automotive antenna.

You must purchase a marine satellite radio antenna for the **K-SIRIUSM** to work.

SRA25 - SIRIUS Marine Antenna

Satellite Radio - Marine Solutions

SRA40 - SIRIUS Marine Antenna

These are marine specific antennae for use with the **K-SIRIUSM**. These antennae are manufactured by Shakespeare and are part of their Galaxy series of marine antenna products.

The antenna do not require any additional power connections. The antenna can be mounted to surfaces up to 1 inch thick .

These antennae includes a 25 foot long low loss cable with quick disconnect and a gold plated TMC antenna connector.

SRC50 - 50-Foot Replacement Cable

The SR50 is a foot long replacement cable for the SRA40/SRA25 antenna. This is not an extension.

Amplifiers

Amplifiers

2008 Amplifier Line Overview

With a heritage of power, performance and quality that spans many decades, Clarion proudly introduces our most sophisticated amplifier line ever. The entire line offers the kind of power and performance that todays customers demand.

Clarion does not ignore the need for an amplifier to look cool, but we put sound quality and performance at the top of our list. We will not forego musical transparency and control for size or a cosmetic feature, instead we embrace the latest in power supply technologies to make our amplifiers simulatenously musical, efficient and compact.

Clarion amplifiers are developed to compliment one-another in terms of features, performance and design. These features exist to help installers complete the integration of these amplifiers into a vehicle faster and more accurately. Likewise, these features also help to improve the performance of the amplifier.

The new 'c Series" amplifiers offer impressive power offerings from a very compact package. Furthermore, these amplifiers feature a Class D design that allows them to produce this power without putting a significant load on your battery or requiring a large heat sink to stay cool.

APX Series

Model	Class	Description	Power (4Ω)
APX2121	AB	2-Channel	2 x 60W
APX4241	AB	4-Channel	4 x 60W
APX1301	AB	Mono	1 x 300W

APX Plus Series

Model	Class	Description	Power (4Ω)
APX2181	AB	2-Channel	2 x 90W
APX4361	AB	4-Channel	4 x 90W

c Series

Model	Class	Description	Power (4Ω)
c220.4	D	4-Channel	4 x 55W
C250.1	D	Mono	1 x 400W

DPX Series

Model	Class	Description	Power
DPX2251	GH	2-Channel	2 x 200W
DPX1851	GH	Mono	1 x 850W
DPX11551	GH	Mono	1 x 1550W

2008 Amplifier Technologies

Precise Frequency Selector Electronic Crossover

The inclusion of an electronic crossover in an amplifier allows the speaker to receive on the musical information that it can produce properly. This means that sound quality from the speaker is improved and power handling in smaller speakers is increased dramatically.

One drawback of an electronic crossover which allows the crossover frequency to be adjusted through the use of a potentiometer is that it can be difficult to precisely set the crossover frequency . This is because the potentiometer is nearly infinitely adjustable. Many crossover controls are only labelled at the top and bottom of their frequency range, making selecting a frequency in the middle of the adjustment range nearly impossible..

Clarion provides a simple and elegant solution for accurately setting crossover points with our PFS (Precise Frequency Selector) crossover. The potentiometer on the APX2181, APX4361, DPX2251, DPX1851, DPX11551, APX290M and APX490M amplifiers has 41 detented positions. Using the supplied charts, you can select a specific crossover frequency, then to set it, turn the adjustment potentiometer the according number of clicks, and you are done.

One of the many benefits of this feature surfaces when you are building a multi-amp system. With conventional (Non PFS) crossover controls, you could end up setting a subwoofer amp set to 70Hz when you were aiming for 85Hz and end up at 100Hz on the mids and highs amp. The result would be a system that lacks mid-bass dynamics and makes the bass frequencies sound disconnected from the mids and highs. PFS makes under/over-lapping of crossovers history.

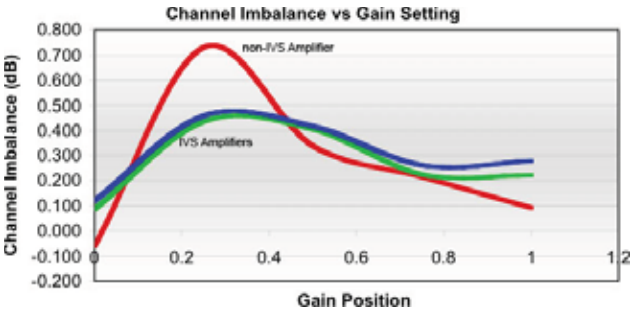
Input Voltage Selector Gain Control

Conventional amplifier gain (or sensitivity) adjustment systems have inherent limitations. These controls utilise ganged or stacked potentiometers to allow you to match the power production capabilities of the amplifier to the signal strength of the source unit that is feeding it. To allow an amplifier to be used with as many different sources as possible, the sensitivity range should be as wide as possible.

Because the gain control uses several potentiometers that are connected together (ganged), the exact resistance of each of these devices may not match the next one. The result is one channel of the amplifier will be louder than the other. This is called channel imbalance.

To combat channel imbalance, Clarion has implleted IVS (Input Voltage Selector) technolgoy on the APX2181, APX4361, DPX2251, DPX1851 and DPX11551 amplifiers.

IVS dramatically reduces channel imbalance by implementing a switch that controls the gain range: 0-0.6v, 0.6-2v, 2-8v. This switch is used in conjunction with a narrow-range adjustable potentiometer for fine tuning. The result is a reduction in maximum potential channel imbalance, improved imaging and a more accurate soundstage.



The graph above shows the amount of channel imbalance from two identical amplifiers, one with IVS and one without, The curve with the large bump (red) is the amplifier without IVS and reaches a maximum channel imbalance of 0.75dB at 0.25% of maximum gain. The two overlapping curves (Blue and Green) show the channel imbalance of an IVS-equipped amp at the 0.6-2V and 2V-8V settings. The maximum imbalance is only 0.45dB - nearly half of the non-IVS amplifier.

You might be asking yourself: Why not individual gain controls? While individual gain controls can offer very accurate sensitivity settings, an installer MUST use an oscilloscope or voltmeter to properly set these controls for accurate channel to channel output. At the very least, the installer could tune the system by ear, but this will require many trips from the listening position back to the amplifier. The decision to implement IVS offers the same result but saves the installer time when setting gains because fewer tools are required.

Hybrid Class GH Power Supplies

Amplifier efficiency has never been more important than it is in today's modern vehicles. Alternators, batteries and factory wiring are smaller than ever to produce the lightest and most fuel efficient vehicles possible at the lowest cost.

Clarion's DPX amplifiers feature Hybrid Class GH power supplies. This technology is the result of years of design and testing to offer the optimum balance of sound quality and efficiency - exactly what a Clarion customer demands.

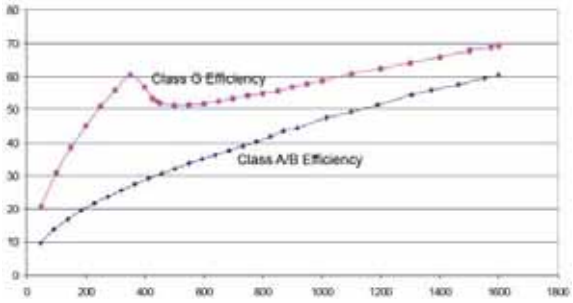
The operation of a Hybrid Class GH amplifier is very simple. Traditional amplifiers use a Class AB output device topology. Essentially, there are a set of switching devices (transistors) for the positive half of the waveform and another set for the negative half of the waveform. These devices operate linearly, passing more current through them as more signal is sent to them. The drawback with Class AB topology is that the output devices operate in their resistive region, rarely fully on or off. This results in a great deal of heat being generated and energy wasted. Around a decade ago, the introduction of Class D amplifiers to the car audio market offered a significant improvement in amplifier efficiency at the expense of sound quality and control. Class D amplifiers operate by cycling the output devices fully on and off very quickly. Adjusting the on ver-

sus off time effects a change in output level. One of the many drawbacks of Class D amplifiers is that they require large filtering networks after the output stage to clean up the signal and remove high frequency switching noise. Class D amplifiers can cause significant electrical interference that can affect radio reception.

Clarion's Hybrid Class GH technology is truly the best of both worlds. Clarion's DPX amplifiers use a fully analog Class AB audio path. This meanss tight, controlled, dynamic power output.

How does Hybrid Class GH work to improve efficiency if the audio path is all analog? Think of the new Dodge Hemi or Cadillac Northstar engines. These engines have the ability to shut down a number of cylinders to reduce fuel consumption and heat generation when under light loads. The power supply of a Hybird Class GH amplifier works in the same way. A microcontroller (computer) inside the amplifier controls the output voltage of the power supply. It keeps the voltage just above the output level necessary to reproduce the audio signal. This means that although the output devices are operated linearly, they are almost fully on - it's the power supply voltage that changes. The result is a significant improvement in efficiency without any effect on amplifier sound quality.

The graph below compares the efficiency of a conventional Class AB 1500W amp to our DPX11551 1500W amplifier. You can see that around 350W DPX11551 is ~65% efficient, whereas the conventional Class AB is merely 25% efficient. This means, that the DPX11551 is drawing only 37A of current, where the Class AB amp would be drawing closer to 97A of current.



Strappable Power
The DPX1851 and DPX11551 amplifiers are both strappable. This means, a pair of amplifiers can be used on a single voice coil to provide additional power production for extreme SPL levels. A pair of DPX1851 amplifiers would produce 1,600W into a 2 or 4 Ohm load, and a pair of DPX11551 would produce 3,000W into a 2 or 4 Ohm load.

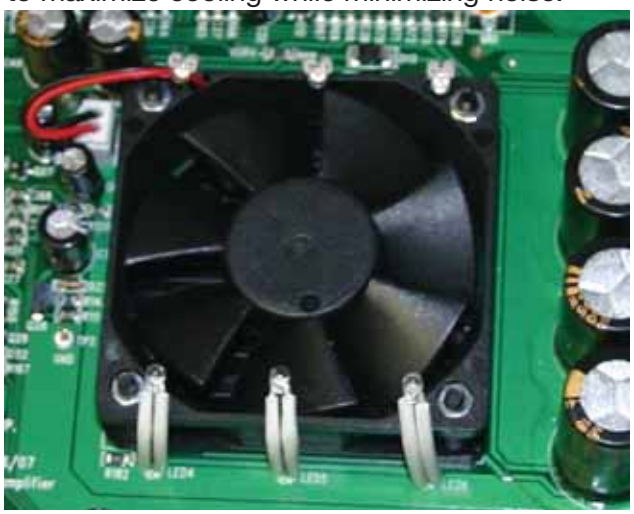
Remote Bass Control
The Clarion DPX2251, DPX1851 and DPX11551 amplifiers offer the ability to connect a an optional Remote Bass Control module called the BC2. This allows you to control the amplifiers output level from the front of the vehicle. Unlike some competitors products, this is not a bass boost control. This was done for optimum sound quality and performance across the entire frequency range, rather than making the bass sound boomy.

Adjustable Subsonic Filter
Clarion's DPX1851 and DPX11551 amplifiers feature an adjustable subsonic filter. This filter is adjustable from 10Hz to 80Hz using a potentiometer on the end panel of the amplifier.

When using subwoofers in vented cabinets with high tuning frequencies (above 35Hz), in or large vented enclosures, physical power handling of the subwoofer may easily be exceeded. The proper use of a subsonic filter will limit the amount of ultra-low frequency information being passed through to the speaker, as well as reduce the amount of power the amplifier consumes in amplifying those low frequencies.

Forced Induction Cooling
Clarion's APX Plus and DPX amplifiers feature forced induction cooling. This is a two-part technology. First, the heatsink design of the amplifier maximizes air flow across the switching devices to hit them with a blast of cool air. Air is then injested into the core of the amplifier and expelled through the ends of the amp. The second part of Forced Induction Cooling is the

computer controlled cooling fan. A thermal sensor connected to the heat sink of the amp combined with programming logic in the amplifiers core decides the appropriate speed for the fan to maximize cooling while minimizing noise.



Mixed-Mode Operation
Clarion 2- and 4-channel amplifiers use an inverting circuit that allows a pair of channels to simultaneously drive multiple satellite speakers in stereo and a subwoofer in a bridged-mono configuration. When used in conjunction with passive crossover components, a Clarion amplifier is capable of mixed mode operation that can power an entire audio system.

Differential Inputs
High-impedance differential input stages separate the input signal ground from the common chassis ground. This creates a very effective ground-loop isolation circuit that reduces the possibility of charging system noise entering the signal path. The circuit also compares the signal information on the shield to that of the center conductor and eliminates any common signal (noise), leaving only clear and detailed music.

This advanced circuit topology ensures that Clarion amplifiers will accurately reproduce all the dynamics and subtleties found in today's digital recordings. At the same time, noise suppression circuits work to effectively to eliminate induced electrical system noise, contributing to maximum dynamic range.

Clarion recommends the use of twisted-pair RCA interconnects with our amplifiers.

High Impedance Inputs
Clarion amplifiers feature high impedance RCA input stages. This allows source unit with low quality high impedance preamp outputs to provide the best possible frequency and phase response while limiting the effect of interconnect reactances on the amplifiers frequency response.

High impedance inputs also allow you drive multiple amplifiers from a single set of preamp outputs using Y-Cables without as dramatic an effect on signal quality

Amplifier Circuit Components
Any product is only as good as its weakest link. When Clarion decided to reduce the physical size of our DPX and APX Plus amplifiers, we knew that this could not be done at the expense of sound quality, performance or reliability.

The decision was made to design these amplifiers for the use of surface mount technology (SMT) devices. SMT devices offer improved tolerances as compared to through-hole devices, and better resist electrical interference from RF or EMI noise.

The result is an amplifier that costs a little more to produce, but sounds better.

Amplifiers – Technologies

Illuminated Heat Sink

Clarion's APX Plus and DPX amplifiers feature an illuminated Carbon Fiber badge in the center of the amplifer. This badge can be removed and rotated to maintain the readability in custom installations.

Multi-Channel Amplifiers

Clarion's multi-channel amplifiers provide four channels of amplification from one chassis/ Each amplifier is equipped with front and rear gain controls and high-/low-pass electronic crossovers. This configuration provides maximum system flexibility.

A four-channel amplifieris the perfect starting point in terms of an amplifier upgrade. This amplifier is the most flexible in terms of system expansion. It can be used to drive four full-range speakers, four full-range speakers and a subwoofer, a mid and tweeter set or more. A four channel amp rarely needs to be replaced as a customers system expands over the years, adding value to the purchase.

CEA-2006 Compliant

The Consumer Electronics Associated developed the CEA-2006 standard to provide a level playing field in which amplifier power and S/N Ratio specificiations can be compared equally. All Clarion power amplifer specifications adhere to the guidelines of the CEA-2006 specification.

The CEA-2006 specification outlines the following test criteria for amplifier power output testing. Rated power shall be measured with all channels driven into a specified load impedance with a distortion level that does not exceed 1%. The amplifier shall produce this power across a specified frequency range (commonly 20Hz to 20kHz) and be powered by a DC power supply of 14.4V. The S/N Ratio specification is measured with respect to an output equal to 1W, commonly 2V in a mobile audio application.

Product Specifications

Clarion has invested a significant amount of time and expense ensuring that our amplifiers provide the best possible sonic performance and excellent value. A look at the specifications associated with any of our amplifiers quickly demonstrates this dedication to purist performance. From the extended frequency response to the low S/N Ratios and distortion specifications, Clarion amplifiers provide class leading performance.

Clarion takes great pride in the fact that our amplifiers offer frequency response well beyond the audible spectrum. This ensures perfectly linear output with no emphasis in any region. It also moves the phase shift commonly associated with high frequency roll-off out of the audible range. The APX4361and APX2181 feature greater than 10Hz-50kHz frequency response within 1dB - not the usual 3dB rating other products use.

2 Year Warranty

Clarion offers a 2-year warranty against defects in materials and workmanship on the APX2181, APX4361, DPX2251, DPX1851 and DPX11551 amplifiers if the product is purchased from, and installed by an authorized Clarion dealer.

PFS Crossover Charts

Please use the following charts to set the crossover frequency on the APX2181, APX4361 and DPX2251 amplifiers.

Position	Crossover Frequency
1	49
2	49
3	50
4	50
5	51
6	52
7	52
8	55
9	60
10	65
11	80
12	85
13	90
14	100
15	125
16	140
17	155
18	165
19	175
20	178
21	180
22	200
23	210
24	220
25	230
26	250
27	280
28	300
29	325
30	369
31	410
32	420
33	455
34	475
35	495
36	500
37	510
38	520
39	530
40	540
41	550

Please use the following charts to set the crossover frequency on the DPX1851 and DPX11551 amplifiers.

Position	Crossover Frequency
1	24
2	24
3	24
4	24
5	24
6	25
7	27
8	30
9	33
10	35
11	40
12	43
13	50
14	55
15	60
16	65
17	70
18	75
19	77
20	82
21	86
22	90
23	95
24	100
25	110
26	120
27	125
28	130
29	150
30	155
31	160
32	165
33	175
34	175
35	180
36	180
37	185
38	190
39	195
40	200
41	200

DPX Amplifier Error Codes

The APX2181, APX4361, DPX2251, DPX1851 and DPX11551 amplifiers feature computer controlled on-board diagnostics. The chart below outlines the error message and the cause of the message.

Amp Illumination	**Red End Panel LED**	**Blue End Panel LED**	**Cause**
ON	OFF	OFF	Amplifier Operating Normally
ON	FLASHING	FLASHING	Thermal Protection
SLOW FLASH	FLASH OUT OF SYNC	OFF	Input Voltage Overload
FAST FLASH	FLASH IN SYNC	OFF	Short Circuit Detection
3 FLASHES	THREE FLASHES	OFF	Repeated Short Circuit

Problem: Amp is in thermal protection mode

Solution:
- Shut off system and let amp cool down.
- Check speaker load on amp, make sure it does not exceed specification
- Ensure adequate air space around the amplifier
- Ensure end panels (DPX amps) are not obstructed and limiting air flow

Problem: Input Voltage Overload

Solution:
- Service vehicle electrical system (alternator and voltage regulator)

Problem: Short Circuit Detection

Solution:
- Check speaker load on amp, make sure it does not exceed specification
- Check all speaker wires for short circuits
- Check all speaker wires for shorts to ground
- Replace speakers with known good units

Problem: Repeated Short Circuit

Solution: Resolve Short Circuit problem, disconnect amp for 15 minutes to reset.

Amplifiers - Specifications

DPX11551

1 CHANNEL HYBRID CLASS GH AMPLIFIER

- Hybrid Class GH Power Supply
- Class AB Audio Path
- IVS (Input Voltage Selector) Gain Control
- PFS (Precise Frequency Selector) Electronic Low-Pass Crossover (30Hz to 250Hz, 12 dB/octave)
- Adjustable Subsonic Filter (10Hz to 50Hz)
- Variable Bass Boost Control (0 to 15dB, 30-125Hz)
- Strappable
- Comlimentary Sanken Triple Darlington Output Transistors
- MOSFET Power Supply Devices
- Speaker Level Inputs
- Double Sided FR4PC Board
- On-Board Diagnostics
- Gold-Plated RCA/Speaker/Power Connectors
- Illuminated Amplifier Shroud
- Remote Bass Control Ready (BC2 Sold Separetly)

Specifications

Number of Channels	1
Frequency Response (±1.0dB)	10 Hz to 230Hz
Signal-to-Noise Ratio (CEA-2006)	>63 dB
Noise Floor	< 1mV
input Impedance	22 kOhms
Input Sensitivity	0.2 to 0.6 V
	0.6 to 2.0V
	2 to 8V
High Level Input Sensitivity	0.4v to 1.2V
	1.2 to 4V
	4 to 16V
Bass Boost	0 -15dB @ 45Hz
Power Output @ 2 Ohms (CEA-2006)	1550W
Power Output @ 4 Ohm (CEA-2006)	850W
Dimensions (l x w x h)	16-3/4"x10-1/8"x2-3/8"

DPX1851

1 CHANNEL HYBRID CLASS GH AMPLIFIER

- Hybrid Class GH Power Supply
- Class AB Audio Path
- IVS (Input Voltage Selector) Gain Control
- PFS (Precise Frequency Selector) Electronic Low-Pass Crossover (30Hz to 250Hz, 12 dB/octave)
- Adjustable Subsonic Filter (10Hz to 50Hz)
- Variable Bass Boost Control (0 to 15dB, 30-125Hz)
- Strappable
- Comlimentary Sanken Triple Darlington Output Transistors
- MOSFET Power Supply Devices
- Speaker Level Inputs
- Double Sided FR4PC Board
- On-Board Diagnostics
- Gold-Plated RCA/Speaker/Power Connectors
- Illuminated Amplifier Shroud
- Remote Bass Control Ready (BC2 Sold Separetly)

Specifications

Number of Channels	1
Frequency Response (±1.0dB)	16 Hz to 150Hz
Signal-to-Noise Ratio (CEA-2006)	>68 dB
Noise Floor	< 1 mV
Input Impedance	22 kOhms
Input Sensitivity	0.2 to 0.6 V
	0.6 to 2.0V
	2 to 8V
High Level Input Sensitivity	0.4v to 1.2V
	1.2 to 4V
	4 to 16V
Bass Boost	0 -15dB @ 45Hz
Power Output @ 2 Ohms (CEA-2006)	850W
Power Output @ 4 Ohm (CEA-2006)	460W
Dimensions (l x w x h)	13-5/8"x10-1/8"x2-3/8"

Amplifiers - Specifications

DPX2251

2/1 CHANNEL HYBRID CLASS GH AMPLIFIER

- Hybrid Class GH Power Supply
- Class AB Audio Path
- IVS (Input Voltage Selector) Gain Control
- PFS (Precise Frequency Selector) Electronic High/Low-Pass Crossover (50Hz to 550Hz/550Hz to 5.5kHz, 12 dB/octave)
- Variable Bass Boost Control (0 to 15dB @ 50Hz)
- Bridgeable and Mixed Mode operation
- Comlimentary Sanken Triple Darlington Output Transistors
- MOSFET Power Supply Devices
- Speaker Level Inputs
- Double Sided FR4PC Board
- On-Board Diagnostics
- Gold-Plated RCA/Speaker/Power Connectors
- Illuminated Amplifier Shroud

Specifications

Number of Channels	2
Frequency Response (±1.0dB)	18 Hz to 30kHz
Signal-to-Noise Ratio (CEA-2006)	> 86 dB
Noise Floor	< 1.5mV
Channel Separation	> 70dB
Input Impedance	22 kOhms
Input Sensitivity	0.2 to 0.6 V
	0.6 to 2.0V
	2 to 8V
High Level Input Sensitivity	0.4v to 1.2V
	1.2 to 4V
	4 to 16V
Bass Boost	0 -15dB @ 45Hz
Power Output @ 4 Ohm Stereo (CEA-2006)	180W x 2
Power Output @ 2 Ohms Stereo (CEA-2006)	300W x 2
Power Output @ 4 Ohm Mono (CEA-2006)	600W x 1
Dimensions (l x w x h)	12-3/4"x10-1/8"x2-3/8"

APX4361

4/3/2 CHANNEL CLASS AB AMPLIFIER

- Class AB Audio Path
- IVS (Input Voltage Selector) Gain Control
- PFS (Precise Frequency Selector) Electronic High/Low-Pass Crossover (50Hz to 550Hz/550Hz to 5.5kHz, 12 dB/octave)
- Variable Bass Boost Control (0 to 15dB @ 50Hz)
- Bridgeable and Mixed Mode operation
- Comlimentary Sanken Triple Darlington Output Transistors
- MOSFET Power Supply Devices
- F/R source select switch
- Speaker Level Inputs
- Double Sided FR4PC Board
- On-Board Diagnostics
- Gold-Plated RCA/Speaker/Power Connectors
- Illuminated Amplifier Shroud

Specifications

Number of Channels	4
Frequency Response (±1.0dB)	10 Hz to 50kHz
Signal-to-Noise Ratio (CEA-2006)	> 86 dB
Noise Floor	< 2mV
Channel Separation	>70dB
THD@ Rated Output	0.05 %
Input Impedance	33 kOhms
Input Sensitivity	0.2 to 0.6 V
	0.6 to 2.0V
	2 to 8V
High Level Input Sensitivity	0.4v to 1.2V
	1.2 to 4V
	4 to 16V
Bass Boost	0 -15dB @ 50Hz
Power Output @ 4 Ohm Stereo (CEA-2006)	90W x 4
Power Output @ 2 Ohms Stereo (CEA-2006)	160W x 4
Power Output @ 4 Ohm Mono (CEA-2006)	320W x 2
Dimensions (l x w x h)	12-1/4"x10-1/8"x2-3/8"

Amplifiers -Specifications

APX2181

2/1 CHANNEL CLASS AB AMPLIFIER

- Class AB Audio Path
- IVS (Input Voltage Selector) Gain Control
- PFS (Precise Frequency Selector) Electronic High/Low-Pass Crossover (50Hz to 550Hz/550Hz to 5.5kHz, 12 dB/octave)
- Variable Bass Boost Control (0 to 15dB @ 50Hz)
- Bridgeable and Mixed Mode operation
- Comlimentary Sanken Triple Darlington Output Transistors
- MOSFET Power Supply Devices
- Speaker Level Inputs
- Double Sided FR4PC Board
- On-Board Diagnostics
- Gold-Plated RCA/Speaker/Power Connectors
- Illuminated Amplifier Shroud

Specifications

Number of Channels	2
Frequency Response (±1.0dB)	10 Hz to 50kHz
Signal-to-Noise Ratio (CEA-2006)	> 86 dB
Noise Floor	< 2mV
Channel Separation	>70dB
THD@ Rated Output	0.05 %
Input Impedance	33 kOhms
Input Sensitivity	0.2 to 0.6 V
	0.6 to 2.0V
	2 to 8V
High Level Input Sensitivity	0.4v to 1.2V
	1.2 to 4V
	4 to 16V
Bass Boost	0 -15dB @ 50Hz
Power Output @ 4 Ohm Stereo (CEA-2006)	90W x 2
Power Output @ 2 Ohms Stereo (CEA-2006)	160W x 2
Power Output @ 4 Ohm Mono (CEA-2006)	320W x 1
Dimensions (l x w x h)	10"x10-1/8"x2-3/8"

APX1301

1 CHANNEL CLASS AB AMPLIFIER

- Class AB Audio Path
- Adjustable Low-Pass Crossover (30Hz to 300Hz, 12 dB/octave)
- Selectable Bass Boost (0dB, 6dB, 12dB)
- MOSFET Power Supply Devices
- Speaker Level Inputs
- Double Sided FR4PC Board
- Gold-Plated RCA/Speaker Connectors

Specifications

Number of Channels	1
Frequency Response (±1.0dB)	10 Hz to 300Hz
Signal-to-Noise Ratio (CEA-2006)	> 70 dB
THD@ Rated Output	<0.1 %
Input Impedance	22 kOhms
Input Sensitivity	0.2V to 5.5V
Bass Boost	0, 6dB, 12dB
Power Output @ 2 Ohm (CEA-2006)	400W x 1
Power Output @ 4 Ohms (CEA-2006)	300W x 1
Dimensions (l x w x h)	11-7/8"x11"x2-1/4"

Amplifiers - Specifications

APX4241

4/3/2 CHANNEL CLASS AB AMPLIFIER

- Class AB Audio Path
- Independantly Adjustable Front and Rear High/Low-Pass Crossovers (30Hz to 300Hz, 12 dB/octave)
- Selectable Bass Boost (0dB, 6dB, 12dB)
- MOSFET Power Supply Devices
- Speaker Level Inputs
- Double Sided FR4PC Board
- Gold-Plated RCA/Speaker Connectors

Specifications

Number of Channels	4
Frequency Response (±1.0dB)	20 Hz to 30kHz
Signal-to-Noise Ratio (CEA-2006)	> 75 dB
THD@ Rated Output	<0.1 %
Input Impedance	22 kOhms
Input Sensitivity	0.2V to 5.5V
Bass Boost	0, 6dB or 12dB
Power Output @ 4 Ohms Stereo (CEA-2006)	60W x 4
Power Output @ 2 Ohms Stereo (CEA-2006)	80W x 4
Power Output @ 4 Ohms Mono (CEA-2006)	180W x 2
Dimensions (l x w x h)	11-7/8"x11"x2-1/4"

APX2121

2/1 CHANNEL CLASS AB AMPLIFIER

- Class AB Audio Path
- Adjustable High/Low-Pass Crossovers (30Hz to 300Hz, 12 dB/octave)
- Selectable Bass Boost (0dB, 6dB, 12dB)
- MOSFET Power Supply Devices
- Speaker Level Inputs
- Double Sided FR4PC Board
- Gold-Plated RCA/Speaker Connectors

Specifications

Number of Channels	2
Frequency Response (±1.0dB)	20 Hz to 30kHz
Signal-to-Noise Ratio (CEA-2006)	> 85 dB
THD@ Rated Output	<0.1 %
Input Impedance	22 kOhms
Input Sensitivity	0.2V to 5.5V
Bass Boost	0, 6dB or 12dB
Power Output @ 4 Ohms Stereo (CEA-2006)	60W x 2
Power Output @ 2 Ohms Stereo (CEA-2006)	80W x 2
Power Output @ 4 Ohms Mono (CEA-2006)	180W x 1
Dimensions (l x w x h)	7-1/8" x 11"x2-1/4"

Processors - EQS746 / MCD360

EQS746

1/2-DIN GRAPHIC EQUALIZER/CROSSOVER

- 7-Band Graphic Equalizer
- Front panel selectable Main/Auxiliary Inputs
- Front/Rear output with fader and subwoofer output with subwoofer level control
- Selectable Subwoofer Low-Pass Frequency at 60 or 90 Hz
- 6-Channel/7-Volt RCA Line-Level Output
- Auxiliary input sensitivity
- Blue Illumination

Specifications

Power Source:	14.4V DC Negative Ground
Frequency Response	10 Hz to 50 kHz
Signal-to-Noise Ratio	100 dB
Output Voltage	7.0 Vrms
Center Frequencies	50Hz, 125Hz, 125Hz, 315Hz, 750Hz, 2.2kHz, 6kHz, 16kHz
Dimensions (w x h x d)	7" x 1-1/8" x 4-1/16"

MCD360

3-WAY ELECTRONIC CROSSOVER

- 18 dB/Octave Slope-Variable Crossovers
- Front, Rear and Subwoofer Outputs with Level Controls
- Built-in Bass EQ
- Super-Flexible Design
- Remote Subwoofer Level Control
- Crossover-Frequency Multiplier Switch
- 2/4/6 Channels of Input
- Separate Front and Rear Crossover Points

Specifications

Power Source:	14.4V DC Negative Ground
Frequency Response	10 Hz to 50 kHz
Signal-to-Noise Ratio	>100 dB
Separation	60dB
High-Pass Frequency Range	32 Hz to 8 kHz, Front 32 to 400 Hz, Rear
Subwoofer Equalizer Center Frequency	25 to 100 Hz
Subwoofer Equalizer Boost	0 to 18 dB
Output Voltage	5.0 Vrms
Ouput Impedance	100 Ohms
Input Impedance	20k Ohms
Crossover Slope Rate	18dB/Octave
Crossover Characteristics	Butterworth
Ouput Gain	1:2 (+6dB)
Distortion	0.01% THD at 1V
Dimensions (w x h x d)	5-1/2" x 1-3/4" x 5 -1/2"

Subwoofers

Signature Series Woofers
Canada Only Model

Clarion's dedication to Sound Genesis - reproducing music as it was originally played - is taken to a new level with the re-introduction of the Signature Series line of component speakers and subwoofers. These products use the latest technologies to produce music that is dynamic, accurate and easy to listen to.

Composite Cone Design
The cone of any speaker must balance three important criteria to recreate music accurately - mass, damping and rigidity. The Composite Cone Design used on the Signature Series speakers is the secret to their incredible performance. The cone is a sandwich of glass fibre and PMI (Polymethacrylimide) foam. This cone is extremely low in mass, while being rigid and well damped at the same time.

Rubber Surround
Signature Series speakers feature a rubber surround for enhanced flexibility, low distortion and reliability.

Powder coated damped aluminum basket
Providing a stable platform for the speaker to work from is critical. The cast and powder coated aluminum baskets used in Signature Series speakers feature a low resonance design and incredible strength.

Spring Loaded Terminals
The speaker terminals are spring loaded push-types with minimal contact resistance and high transmission efficiency. These connections allow for a quick connection that is reliable.

3-Inch Aluminum Voice Coil Former
At the heart of Signature Series subwoofers is a 3-inch diameter aluminum voice coil former. This former helps wick heat away from the voice coil winding for improved power handling. The Aluminum former doesn't add significant mass to the cone , resulting in excellent response.

4-layer CCAW Voice Coil winding
The Signature Series subwoofers employ a four-layer Copper Clad Aluminum Wire winding design. The dual voice coil design is low in mass, but helps create an intense magnetic field, further improving transient response. The voice coil winding length is 60mm. Thise ensures linear operation at high excursion levels.

Dual Spider Design
Because of the massive amounts of power that the Signature Series subwoofer can handle, the design requires two Conex spiders to ensure linear motion throughout the drivers range. The bottom spider is inverted to cancel out any non-linearities present.

Subwoofers – Technologies

Spider Exhaust Technology

If you look at the base of the basket of a Signature Series subwoofer, you will see many mesh-protected vents. These vents serve two purposes. First and foremost, they allow hot air to escape from the voice coil, helping to improve power handling. These vents also relieve pressure from underneath the spider, reducing distortion and improving linearity at high excursion levels.

High Excursion Design

Reproducing low frequencies at high levels requires a significant amount of air to be moved. Signature Series subwoofers have an Xmax specification of 25mm (1-inch) for extreme low frequency output.

Bumped and Vented Pole Piece

The vent in the pole piece of the Signature Series subwoofers allows for the release of air pressure beneath the dust cap which allows for more linear cone motion. It also allows hot air to escape from the inside of the voice coil assembly - further improving the speakers ability to handle high levels of power. The bump provides additional space for the 3-inch aluminum voice coil to move up and down, providing linear speaker operation and incredible excursion capabilities.

PXW Subwoofers

Clarion PXW subwoofers have been designed to offer the best possible performance, while featuring design characteristics found in speakers costing two to three times as much.

Custom Designed Die-Cast Aluminum Basket

The foundation of any subwoofer is its basket. This is what holds all the components in alignment, ensuring reliable and linear operation. The new Clarion PXW subwoofers feature a massive die-cast aluminum basket structure that not only looks formidable, but offers a rock-steady foundation for the motor and cone assembly.

Spider Exhaust Technology

Keeping the voice coil assembly of a subwoofer cool is paramount to making sure the driver lasts and sounds good. As the motor assembly (voice coil, magnet, top and bottom plates) heat up, they become less efficient - this is known as power compression.

A speaker that can better dissipate heat will sound better and last longer. Clarion PXW subwoofers feature SET (Spider Exhaust Technology) cooling to allow heat generated from the voice coil assembly to escape from the area beneath the spider.

SET also allows pressurized air to escape from beneath the spider. This improves overall speaker

linearity, especially at high excursion levels.

The PXW subwoofer allows hot air to escape through the spokes of the basket. If you look inside the basket, you can see that each spoke is hollow. This extends to below the spider mounting plateau, providing ventilation and cooling.

Dual Strontium Ferrite Magnets

There are many ways to alter the efficiency of a speaker. The most common method is to adjust the magnetic field strength by altering the gap between the voice coil and top plate. Clarion has implemented dual high-quality Strontium Ferrite magnets in all PXW subwoofers. This provides an intense magnetic field for excellent efficiency, as well as controlled, dynamic performance.

An additional benefit of this large motor structure is its thermal mass. This helps dissipate heat from the voice coil to further improve performance.

Hyper Extended Vented Pole Piece

The T-Yoke (Bottom plate) on all PXW subwoofers features a large cooling vent that is protected by a mesh screen. This vent serves two purposes. It allows heated air to escape from the inside of the voice coil and allows pressurized air to escape from beneath the dust cap. The mesh screen keeps debris out of the narrow-gap voice coil gap area.

The bottom of the pole piece has been extended to allow increased excursion capabilities from the PXW subwoofers. Conventional designs result in the voice coil bumping into the bottom plate.

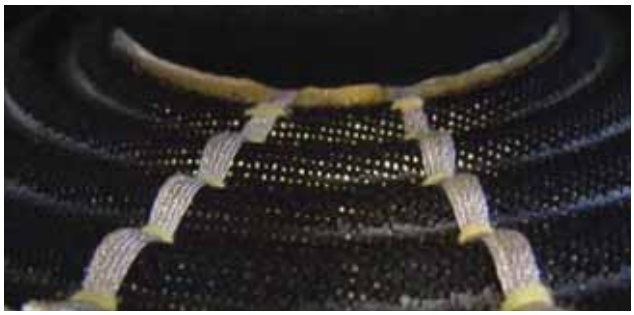
Gold Plated Terminal Blocks

A solid electrical connection is mandatory to ensuring reliable speaker operation. The new PXW subwoofers feature custom-tooled terminal blocks that will secure up to an 8 AWG conductor.

Sewn Tinsel Leads

The connection between the voice coil and the terminal block is critical, since all the power sent to the speaker gets transferred through these connections. PXW subwoofers feature massively oversized braided tinsel leads for excellent power transfer.

To ensure silent and reliable operation, the tinsel leads have been sewn to the spider at the bottom of each roll. This allows the tinsel lead to flex independently of the spider, preventing changes in driver compliance at different excursion levels. This feature also allows the tinsel leads to operate completely silently.



Linear Roll Poly-Cotton Spiders

Linear spiders offer extremely linear cone motion control. This means that the new Clarion PXW subwoofers will sound good while operating at low levels and remain controlled and dynamic when being pushed to high excursions.

Dual Heat Resistant Voice Coils

All PXW subwoofers feature Dual Voice Coil designs. You have your choice of dual 2 Ohm or dual 4 Ohm for 1, 2, 4 or 8 Ohm Impedances. This ensures that Clarion PXW subwoofers will work perfectly to achieve the maximum power potential when connected to any amp on the market.

Subwoofers – Technologies

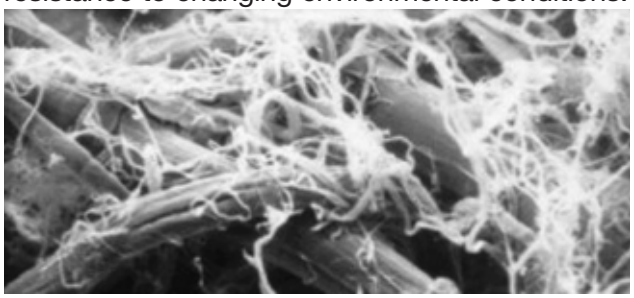
You can tell which driver you are ordering by the last number in the model. The PXW1x51 are dual 2 Ohm drivers and PXW1x52 are dual 4 Ohm driver. If you parallel the voice coils, you get the number at the end of the model number.

PXW1051	Dual 2 Ohm	1 or 4 Ohms
PXW1052	Dual 4 Ohm	2 or 8 Ohms
PXW1251	Dual 2 Ohm	1 or 4 Ohms
PXW1252	Dual 4 Ohm	2 or 8 Ohms
PXW1552	Dual 4 Ohm	2 or 8 Ohms

Kevlar / Paper Composite Cone Design

The balance between strength and mass in a woofer cone is of the utmost importance. The cone of the PXW subwoofers is a composite of pulp paper and Kelvar Fibers.

Paper cones have excellent strength to mass properties, but can soften slightly in high humidity environments. To rectify this, Clarion mixes Kevlar fibers into the pulp paper mixture. These fibers produce a much stronger cone that offers better resistance to changing environmental conditions.



CoPolymer Composite High Excursion Surround

The surround at the outer edge of the cone serves three important duties - it provides compliance to the cone assembly, it damps the cone assembly, and it allows the speaker cone to travel through its range of motion while maintaining an airtight seal.

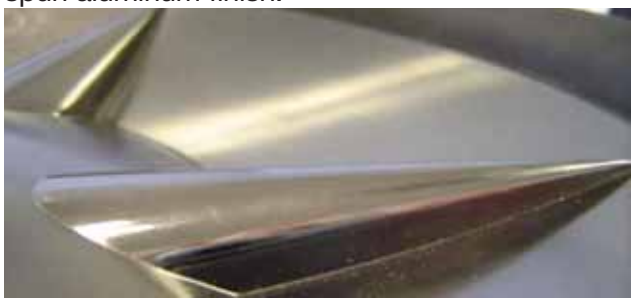
Clarion PXW subwoofers feature a synthetic rubber surround that provides the flexibility of foam while offering the reliability and longevity of rubber. The shape of the surround allows the cone to travel through its range of motion unimpaired for increased linearity.

Polypropylene Electrolytic Spun Aluminum Coated Dust Cap

The dust cap on PXW subwoofers contains more engineering than meets the eye. The shape of the dust cap, with this five reinforcing spokes, adds significant strength to the design. Each spoke triangulates the center of the cone, ensuring it does not flex during motion.

The dust cap covers the entire face of the subwoofer to add strength to the Kevlar/ Paper reinforced cone beneath. The dust cap triangulates the outer edge of the cone below, further strengthening the assembly.

The dust cap features an electrolytically applied spun aluminum finish.



Hidden Screw Mounting Gasket

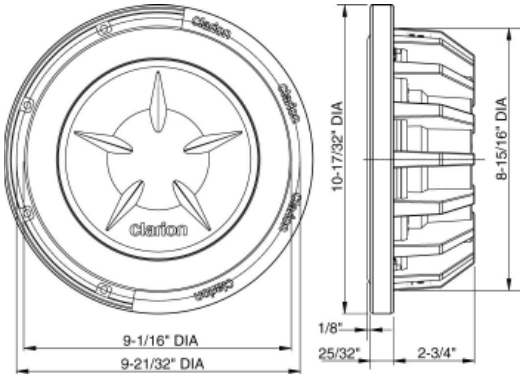
The new PXW subwoofers feature a custom tooled rubber mounting gasket. This gasket ensures a perfectly airtight seal against the face of an enclosure, and conceals the mounting hardware for a clean, attractive installation. The gasket can be removed and reversed for installations that will show the rear of the subwoofer.

PFW subwoofer

The evolution of the shallow-mount subwoofer - the PFW1051.

This subwoofer was designed to offer the best possible performance from a driver that requires only three inches of mounting depth.

Clarion chose not to add additional expense to the PFW subwoofer by implementing overly exotic material applications or complex suspension designs - instead we simply took everything that makes the PXW subwoofers great, and compressed it into a shallower package. Reliable, easy to install and great sounding - the PFW1051.



Single Voice Coil

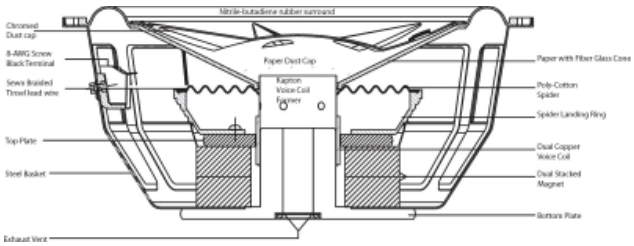
Unlike the PXW subwoofers, the PFW1051 is available only in a single 4 Ohm voice coil configuration with a 300W continuous, 600W Maximum thermal power handling rating.

Small Enclosure Requirements

Building a subwoofer that looks impressive is one thing, but ensuring it will perform in the kind of applications people want is equally, if not more important. The new PFW subwoofer sounds excellent in a vented enclosure. The optimum volume being 0.5 cubic feet with a 2" dia vent, 9.5 inches long for excellent low frequency extension and power handling.

SRW subwoofers

Learning from our success with the PXW subwoofers, Clarion introduces the third generation SRW line of subwoofers. Many of the technologies and features found on the PXW subwoofers have made their way to the SRW series.



Paper / Glass Fiber Composite Cone Design

The balance between strength and mass in a woofer cone is of the utmost importance. The cone of the SRW subwoofers is a composite of pulp paper and glass fibers.

Paper cones have excellent strength to mass properties, but can soften slightly in high humidity environments. To rectify this, Clarion mixes glass fibers into the pulp paper mixture. These fibers produce a much stronger cone that offers better resistance to changing environmental conditions.

Powder Coated Steel Basket

Building a woofer that sounds good is one thing, but todays demanding autosound enthusiasts

want their woofers to look good at the same time. The new SRW subwoofers were designed with this in mind. The powder coated stamped steel basket emulates the design of the PXW subwoofer, providing a stable, solid foundation.

Rear-Vented Pole Piece

To prevent pressure from building up under the dust cap and causing distortion and nonlinearities, a vent is provided on the rear of the pole piece. This allows for smooth cone movement, which contributes to smooth, powerful bass response.

This vent also allows hot air to exit from the inside of the voice coil and motor assembly. Heat is the enemy of every speaker. Improved cooling means that your subwoofer will play louder, longer.

S.E.T. - Spider Exhaust Technology

Adding to the arsenal of 'cool technolgies' is Spider Exhaust Technology. Cooling vents incorporated into the spider mounting frame provide a path for hot air to escape from the voice coil. These vents also release pressure from behind the spider, helping to improve performance and reduce distortion.

Gold Plated Terminal Blocks

Terminal blocks allow for secure and solid electrical connections to be made to the woofer. The terminal blocks will easily accept 8 AWG cables for efficient current transfer.

Kapton Voice Coil Former

Helping to dissipate heat and increase speaker longevity is a Kapton voice coil former. Kapton is a Polymide Film developed by DuPont. Kapton offers an excellent balance of thermal resistance and low mass. This helps to reduce the overall moving mass of the driver and provides quicker transient response and improved dynamics.

Powerful Strontium Magnet

high conductivity double-stacked Strontium magnets are used in the SRW subwoofers to obtain an air-gap magnetic flux density that is higher than conventional ferrite magnets. Combining this magnet with our heat-resistant voice coil and the result is a line of subwoofers that are able to deliver high SPLs with excellent sound quality

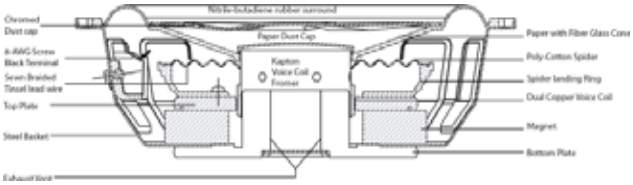
Nitrile Butadiene Rubber Surround

Ensuring a reliable and flexible connection between the cone assembly and the basket is an NBR rubber surround

SFW Subwoofers

Just as the PFW is a shallow version of the PXW subwoofer, so is the SFW subwoofer a shallow version of the SRW sub. We took everything that made the SRW great and compressed it in a package that requires less than 3 inches of mounting depth.

The SFW1051 features a single 4 Ohm voice coil winding with a rated continuous thermal power handling of 300W. A single strontium ferrite magnet enclosed by a stamped steel basket provides a serious kick.



Building a shallow subwoofer is one thing, but providing one that performs is another. The SFW1051 was designed to offer 'big sub' bass in a small space. A vented enclosure with an internal volume of 0.5 cubic feet, tuned to 35Hz sounds fantastic and the combination works great when powered by the APX1301 amplifier.

SW Subwoofers

Providing performance at an unbeatable price are the SW1051 and SW1251 subwoofers from Clarion. These subwoofers feature many of the same technologies as the SRW and PXW subwoofers, including a vented pole piece, Polypropylene dust cap, Strontium Ferrite Magnets, and high temperature voice coil formers.

High Temperature Voice Coil Assembly

SW subwoofers are designed with a single high temperature 4 Ohm voice coil. The voice coil is wrapped around a 2-inch Kapton former for solid and reliable performance.

Spider Exhaust Technology (SET)

Additional cooling is provided thanks to a series of cooling vents that are incorporated into the top of the voice coil former. These vents allow hot air to escape from underneath the spider, as well as preventing this air from becoming pressurized during high excursion levels.

Powder Coated Steel Basket

SW subwoofers are based on a stamped steel basket that has been treated to a textured black powder coat finish. The basket features spokes that have their edges rolled over for additional strength.

Rear-Vented Pole Piece

To prevent pressure from building up under the dust cap and causing distortion and nonlinearities, a vent is provided on the rear of the pole piece. This allows for smooth cone motion, which contributes to linear, powerful bass response.

This vent also allows hot air to exit from the inside of the voice coil and motor assembly. Heat is the enemy of every speaker. Improved cooling means that your subwoofer will play louder, longer.

Small Enclosure Requirements

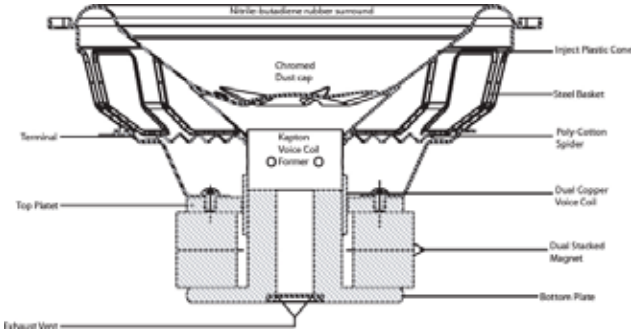
Clarion SW series subwoofers will produce tight, musical bass from very small enclosures. Not having to waste valuable trunk space means you can fit more woofers in the same space, or have room for your personal belongings.

Powerful Strontium Magnet Assembly

A high conductivity double-stacked magnet is used in the SW subwoofers to obtain an air-gap magnetic flux density that is higher than conventional ferrite magnets. Combining this magnet with a heat-resistant voice coil results in a subwoofer that is able to deliver high output levels while sounding great.

Rubber Coated Tinsel Leads

SW subwoofers feature gold plated electrical terminals for a reliable connection. The tinsel leads that run from the terminals to the voice coil are encased in rubber to ensure they will never short against anything. This rubber casing also helps damp their movement, ensuring the driver operates without mechanical noise that would interfere with music reproduction.



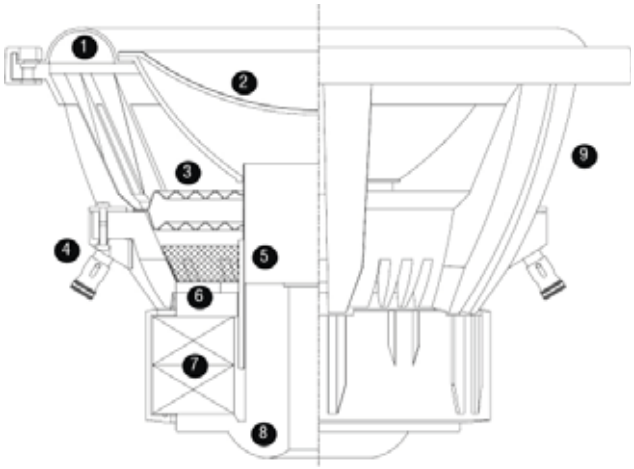
Subwoofers – SSW1001 Information

SSW1001 (Canadian Model)

10" DUAL VOICE COIL SIGNATURE SERIES SUBWOOFER

- Composite Cone Design
- Powder Coated Damped Aluminum Basket
- Butyl Rubber Surround
- Dual High-Performance Conex Spiders
- 4-Layer CCAW Voice Coil
- 3” aluminum voice coil bobbin
- Dual 4-Ohm Voice Coils
- Dual Strontium Ferrite Magnets (85.5 Oz each)
- Oversized tinsel leads
- Gold-Plated Push Type Terminals
- S.E.T. (Spider Exhaust Technology) cooling
- Chrome Plated, Bumped and Vented T-Yoke
- Injection-moulded rubber mounting gasket
- Custom Tooled Magnet Boot

Subwoofer Class	10"
Mounting Hole	231 mm
Mounting Depth	175 mm
Outside Diameter	275 mm
Max. Peak Music	2000 W
Continuous Power	1000 W
Fs (Hz)	33.5
Qms	4.27
Vas (Liters)	15.1
Mms (grams)	190.7
Xmax (mm)	24.0
Qes	0.753
Re (Ohms)	1.6
Le (mH)	n/a
Z (ohms)	1.92
Qts	0.64
no (%)	0.0727
1-W SPL (dB)	80.76
2.8 V SPL (dB)	87.75



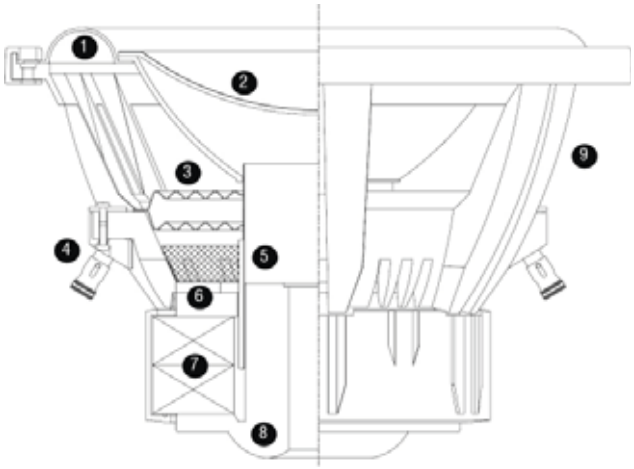
1 Rubber Surround
2 Composite Cone Design
3 Dual Linear Conex Spiders
4 Spring Loaded Terminals
5 3-inch 4-Layer Voice Coil on Aluminum former
6 Spider Exhaust Technology
7 Dual Magnet Assembly
8 Extended Bottom Plate
9 Cast Aluminum Chassis

SSW1201 (Canadian Model)

12" DUAL VOICE COIL SIGNATURE SERIES SUBWOOFER

- Composite Cone Design
- Powder Coated Damped Aluminum Basket
- Butyl Rubber Surround
- Dual High-Performance Conex Spiders
- 4-Layer CCAW Voice Coil
- 3” Black Anodized aluminum voice coil bobbin
- Dual 4-Ohm Voice Coils
- Dual Strontium Ferrite Magnets (85.5 Oz each)
- Oversized tinsel leads
- Gold-Plated Push Type Terminals
- S.E.T. (Spider Exhaust Technology) cooling
- Chrome Plated, Bumped and Vented T-Yoke
- Injection-moulded rubber mounting gasket
- Custom Tooled Magnet Boot

Subwoofer Class	12"
Mounting Hole	231 mm
Mounting Depth	175 mm
Outside Diameter	275 mm
Max. Peak Music	2000 W
Continuous Power	1000 W
Fs (Hz)	26.82
Qms	4.681
Vas (Liters)	41.84
Mms (grams)	270
Xmax (mm)	24
Qes	0.578
Re (Ohms)	1.468
Le (mH)	1.517
Z (ohms)	7.0704
Qts	0.514
no (%)	0.135
1-W SPL (dB)	87.57
2.8 V SPL (dB)	88.89



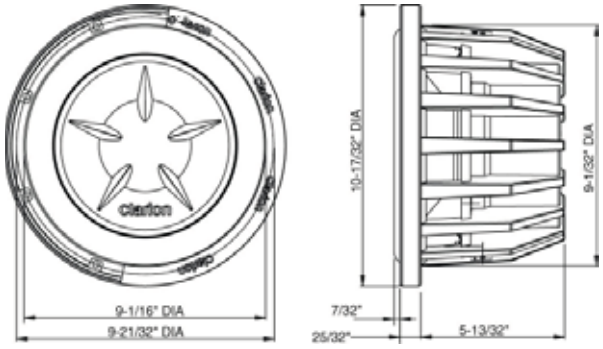
1 Rubber Surround
2 Composite Cone Design
3 Dual Linear Conex Spiders
4 Spring Loaded Terminals
5 3-inch 4-Layer Voice Coil on Aluminum former
6 Spider Exhaust Technology
7 Dual Magnet Assembly
8 Extended Bottom Plate
9 Cast Aluminum Chassis

Subwoofers – PXW1051/1052 Information

PXW1051 / PXW1052 Features

- Black Powder Coat Die Cast Aluminum Basket
- Polypropylene Electrolytic Spun Aluminum Coated Dust Cap
- Kevlar / Paper Composite Cone
- Co-Polymer Composite high-excursion surround
- Dual Strontium Ferrite Magnets
- Hyper Extended Pole Piece Assembly
- Dual Voice Coils
- Custom Tooled Gold Plated terminal blocks
- S.E.T. (Spider Exhaust Technology) cooling / venting
- Mesh Covered Vented Pole Piece
- Reversable hidden screw mounting gasket
- 1,000-Watt Maximum Music Power
- 500-Watt Continuous Power Handling

Dimensions



PXW1051 T-S Parameters

Fs (Hz)	30.86
Qms	6.474
VAS (Litres)	32.95
VAS (Cubic Feet)	1.164
MMs (Grams)	126.9
Xmax (mm)	12
Xmax (inches)	0.472
Sd (m2)	0.0333
Qes (Series / Parallel)	0.509 / 0.556
Re (Serial / Parallel)	6.474 / 3.865
Le (Series / Parallel)	4.93 / 1.225
Z (Series / Parallel)	7.768 / 4.638
Bl (Series / Parallel)	13.68 / 16.93
Qts (Series / Parallel)	0.472 / 0.512
dB SPL (1W/1M)	84.8
Power (RMS / MAX)	500 / 1000
Vd (Cubic Feet)	0.12
Outside Diameter	10-9/16"
Mounting Hole	9-1/8"
Mounting Depth	5-5/16"
Total Height	6-3/16"
Total Weight	14.8 lbs

PXW1052 T-S Parameters

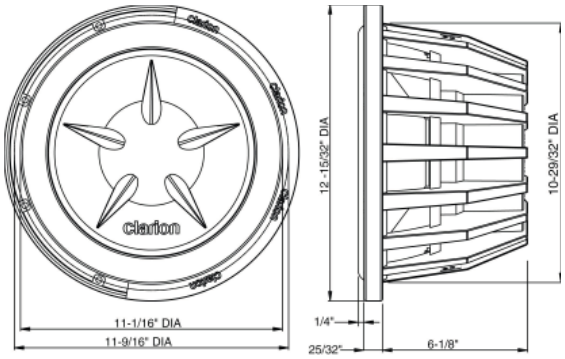
Fs (Hz)	33.56
Qms	6.206
VAS (Litres)	30.17
VAS (Cubic Feet)	1.065
MMS (Grams)	117.2
Xmax (mm)	12
Xmax (inches)	0.472
Sd (m2)	0.0333
Qes (Series / Parallel)	0.55 / 0.612
Re (Serial / Parallel)	6.926 / 1.909
Le (Series / Parallel)	7.872 / 1.961
Z (Series / Parallel)	7.311 / 2.291
Bl (Series / Parallel)	17.64 / 8.778
Qts (Series / Parallel)	0.505 / 0.557
dB SPL (1W/1M)	85.16
Power (RMS / MAX)	500 / 1000
Vd (Cubic Feet)	0.12
Outside Diameter	10-9/16"
Mounting Hole	9-1/8"
Mounting Depth	5-5/16"
Total Height	6-3/16"
Total Weight	14.8 lbs

Subwoofers – PXW1251/1252 Information

PXW1251 / PXW1252 Features

- Black Powder Coat Die Cast Aluminum Basket
- Polypropylene Electrolytic Spun Aluminum Coated Dust Cap
- Kevlar / Paper Composite Cone
- Co-Polymer Composite high-excursion surround
- Dual Strontium Ferrite Magnets
- Hyper Extended Pole Piece Assembly
- Dual Voice Coils
- Custom Tooled Gold Plated terminal blocks
- S.E.T. (Spider Exhaust Technology) cooling / venting
- Mesh Covered Vented Pole Piece
- Reversable hidden Screw mounting gasket
- 1,000-Watt Maximum Music Power
- 500-Watt Continuous Power Handling

Dimensions



PXW1251 T-S Parameters

Fs (Hz)	30.76
Qms	6.759
VAS (Litres)	67.73
VAS (Cubic Feet)	2.392
MMs (Grams)	142.6
Xmax (mm)	12
Xmax (inches)	0.472
Sd (m2)	0.0333
Qes (Series / Parallel)	0.593 / 0.692
Re (Serial / Parallel)	3.832 / 1.116
Le (Series / Parallel)	4.843 / 1.2
Z (Series / Parallel)	4.598 / 1.339
Bl (Series / Parallel)	13.34 / 6.666
Qts (Series / Parallel)	0.545 / 0.628
dB SPL (1W/1M)	87.2
Power (RMS / MAX)	500 / 1000
Vd (Cubic Feet)	0.15
Outside Diameter	12-7/16"
Mounting Hole	11-0"
Mounting Depth	6-1/8"
Total Height	7-0"
Total Weight	16.5 lbs

PXW1252 T-S Parameters

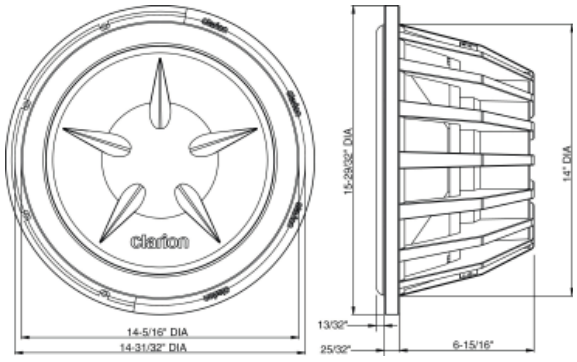
Fs (Hz)	34.27
Qms	7.15
VAS (Litres)	62.76
VAS (Cubic Feet)	2.216
MMs (Grams)	117.2
Xmax (mm)	12
Xmax (inches)	0.472
Sd (m2)	0.0504
Qes (Series / Parallel)	0.62 / 0.726
Re (Serial / Parallel)	7.192 / 1.978
Le (Series / Parallel)	7.206 / 1.786
Z (Series / Parallel)	8.63 / 2.374
Bl (Series / Parallel)	17.59 / 8.53
Qts (Series / Parallel)	0.571 / 0.659
dB SPL (1W/1M)	88.08
Power (RMS / MAX)	500 / 1000
Vd (Cubic Feet)	0.15
Outside Diameter	12-7/16"
Mounting Hole	11-0"
Mounting Depth	6-1/8"
Total Height	7-0"
Total Weight	16.5 lbs

Subwoofers – PXW1552 Information

PXW1552 Features

- Black Powder Coat Die Cast Aluminum Basket
- Polypropylene Electrolytic Spun Aluminum Coated Dust Cap
- Kevlar / Paper Composite Cone
- Co-Polymer Composite high-excursion surround
- Dual Strontium Ferrite Magnets
- Hyper Extended Pole Piece Assembly
- Dual 4-Ohm Voice Coils
- Custom Tooled Gold Plated terminal blocks
- S.E.T. (Spider Exhaust Technology) cooling / venting
- Mesh Covered Vented Pole Piece
- Reversable hidden screw mounting gasket
- 1,500-Watt Maximum Music Power
- 750-Watt Continuous Power Handling

Dimensions



PXW1552 T-S Parameters

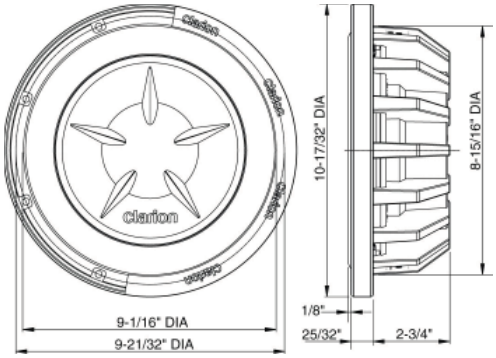
Fs (Hz)	23.28
Qms	5.927
VAS (Litres)	193.1
VAS (Cubic Feet)	6.818
MMs (Grams)	269.2
Xmax (mm)	12.5
Xmax (inches)	0.492
Sd (m2)	0.885
Qes (Series / Parallel)	0.532 / 0.602
Re (Serial / Parallel)	7.092 / 1.954
Le (Series / Parallel)	9.216 / 2.267
Z (Series / Parallel)	8.51 / 2.345
Bl (Series / Parallel)	22.9 / 11.31
Qts (Series / Parallel)	0.488 / 0.546
dB SPL (1W/1M)	88.6
Power (RMS / MAX)	750 / 1,500
Vd (Cubic Feet)	0.21
Outside Diameter	15-15/16"
Mounting Hole	14-1/4"
Mounting Depth	7"
Total Height	7-13/16"
Total Weight	23.55 lbs

Subwoofers – PFW1051 Information

PFW1051 Features

- Black Powder Coat Die Cast Aluminum Basket
- Less than 3" mounting depth
- Polypropylene Electrolytic Spun Aluminum Coated Dust Cap
- Kevlar / Paper Composite Cone
- Co-Polymer Composite high-excursion surround
- Strontium Ferrite Magnets
- Extended Pole Piece Assembly
- Singlel 4-Ohm Voice Coils
- Custom Tooled Gold Plated terminal blocks
- S.E.T. (Spider Exhaust Technology) cooling / venting
- Mesh Covered Vented Pole Piece
- Reversable hidden screw mounting gasket
- 600-Watt Maximum Music Power
- 300-Watt Continuous Power Handling

Dimensions



PFW1051 T-S Parameters

Fs (Hz)	41.29
Qms	6.569
VAS (Litres)	27.21
VAS (Cubic Feet)	0.961
MMs (Grams)	84.76
Xmax (mm)	5.5
Xmax (inches)	0.217
Sd (m2)	0.0331
Qes	0.541
Re	3.302
Le	2.921
Z	3.962
Bl	11.59
Qts	0.5
dB SPL (1W/1M)	87.48
Power (RMS / MAX)	300 / 600
Vd (Cubic Feet)	0.045
Outside Diameter	10-9/16"
Mounting Hole	9-1/8"
Mounting Depth	2-3/4"
Total Height	3-5/8"
Total Weight	9.8 lbs

Subwoofers – SRW1051 Information

SRW1051

10" SINGLE VOICE COIL SUBWOOFER

- Polypropylene Electrolytic Spun Aluminum Dust Cap
- Paper / Glass Fiber Cone Design
- Nitrile Butadiene Rubber High Excursion Surround
- Dual Strontium Ferrite Magnets
- Hyper Extended Pole Piece
- Linear Cotton Spider with Integrated Tinsel Leads
- Gold Plated Terminal Blocks
- Custom Stamped Steel Powder Coated Chassis
- Spider Exhaust Technology voice coil cooling
- Vented Pole Piece

Subwoofer Class	10"
Mounting Hole	9-1/32"
Mounting Depth	4-9/16"
Outside Diameter	10-17/32"
Max. Peak Music	750
Continuous Power	375
Fs (Hz)	31.75
Qms	9.02
Vas (Liters)	29.01
Mms (grams)	121.5
Xmax (mm)	12
Qes	0.499
Re (Ohms)	3.67
Le (mH)	1.41
Z (ohms)	4.404
Qts	0.473
no (%)	0.179
1-W SPL (dB)	84.68
2.8 V SPL (dB)	88.07

Subwoofers – SRW1052 Information

SRW1052

10" DUAL VOICE COIL SUBWOOFER

- Polypropylene Electrolytic Spun Aluminum Dust Cap
- Paper / Glass Fiber Cone Design
- Nitrile Butadiene Rubber High Excursion Surround
- Dual Strontium Ferrite Magnets
- Hyper Extended Pole Piece
- Linear Cotton Spider with Integrated Tinsel Leads
- Gold Plated Terminal Blocks
- Custom Stamped Steel Powder Coated Chassis
- Spider Exhaust Technology voice coil cooling
- Vented Pole Piece

Subwoofer Class	10"
Mounting Hole	9-1/32"
Mounting Depth	4-9/16"
Outside Diameter	10-17/32"
Max. Peak Music	750
Continuous Power	375
Fs (Hz)	32.49
Qms	7.243
Vas (Liters)	30.6
Mms (grams)	109.9
Xmax (mm)	12
Qes	0.499
Re (Ohms)	7.36
Le (mH)	2.465
Z (ohms)	8.832
Qts	0.467
no (%)	0.203
1-W SPL (dB)	85.22
2.8 V SPL (dB)	85.58

Subwoofers – SRW1251 Information

SRW1251

12" SINGLE VOICE COIL SUBWOOFER

- Polypropylene Electrolytic Spun Aluminum Dust Cap
- Paper / Glass Fiber Cone Design
- Nitrile Butadiene Rubber High Excursion Surround
- Dual Strontium Ferrite Magnets
- Hyper Extended Pole Piece
- Linear Cotton Spider with Integrated Tinsel Leads
- Gold Plated Terminal Blocks
- Custom Stamped Steel Powder Coated Chassis
- Spider Exhaust Technology voice coil cooling
- Vented Pole Piece

Subwoofer Class	12"
Mounting Hole	10-29/32"
Mounting Depth	4-3/4"
Outside Diameter	12-15/32"
Max. Peak Music	800
Continuous Power	400
Fs (Hz)	31.75
Qms	7.227
Vas (Liters)	59.01
Mms (grams)	145.7
Xmax (mm)	12
Qes	0.592
Re (Ohms)	3.72
Le (mH)	1.505
Z (ohms)	4.464
Qts	0.547
no (%)	0.307
1-W SPL (dB)	87.02
2.8 V SPL (dB)	90.35

Subwoofers – SRW1252 Information

SRW1252

12" DUAL VOICE COIL SUBWOOFER

- Polypropylene Electrolytic Spun Aluminum Dust Cap
- Paper / Glass Fiber Cone Design
- Nitrile Butadiene Rubber High Excursion Surround
- Dual Strontium Ferrite Magnets
- Hyper Extended Pole Piece
- Linear Cotton Spider with Integrated Tinsel Leads
- Gold Plated Terminal Blocks
- Custom Stamped Steel Powder Coated Chassis
- Spider Exhaust Technology voice coil cooling
- Vented Pole Piece

Subwoofer Class	10"
Mounting Hole	10-29/32"
Mounting Depth	4-3/4"
Outside Diameter	12-15/32
Max. Peak Music	800
Continuous Power	400
Fs (Hz)	31.03
Qms	7.2
Vas (Liters)	68.69
Mms (grams)	131.9
Xmax (mm)	12
Qes	0.641
Re (Ohms)	7.21
Le (mH)	2.721
Z (ohms)	8.652
Qts	0.589
no (%)	0.309
1-W SPL (dB)	87.04
2.8 V SPL (dB)	87.5

Subwoofers – SFW1051 Information

SFW1051

10" SHALLOW MOUNT SINGLE VOICE COIL SUBWOOFER

- Polypropylene Electrolytic Spun Aluminum Dust Cap
- Paper / Glass Fiber Cone Design
- Nitrile Butadiene Rubber High Excursion Surround
- Strontium Ferrite Magnet
- Extended Pole Piece
- Linear Cotton Spider with Integrated Tinsel Leads
- Gold Plated Terminal Blocks
- Custom Stamped Steel Powder Coated Chassis
- Spider Exhaust Technology voice coil cooling
- Vented Pole Piece

Subwoofer Class	10"
Mounting Hole	9-1/32"
Mounting Depth	2-25/32"
Outside Diameter	10-17/32"
Max. Peak Music	600
Continuous Power	300
Fs (Hz)	37.32
Qms	8.635
Vas (Liters)	19.08
Mms (grams)	133.6
Xmax (mm)	5.5
Qes	0.619
Re (Ohms)	3.75
Le (mH)	1.104
Z (ohms)	4.5
Qts	0.578
no (%)	0.154
1-W SPL (dB)	84.03
2.8 V SPL (dB)	87.33

Subwoofers – SW1251 Information

SW1251

12" SINGLE VOICE COIL SUBWOOFER

- Polypropylene Electrolytic Spun Aluminum Dust Cap
- Nitrile Butadiene Rubber High Excursion Surround
- Dual Strontium Ferrite Magnets
- Hyper Extended Pole Piece
- Linear Cotton Spider
- Custom Stamped Steel Powder Coated Chassis
- Vented Pole Piece

Subwoofer Class	12"
Mounting Hole	12-9/32"
Mounting Depth	6-7/16"
Outside Diameter	11-1/32"
Max. Peak Music	700
Continuous Power	350
Fs (Hz)	29.89
Qms	6.573
Vas (Liters)	67.92
Mms (grams)	172.3
Xmax (mm)	12
Qes	0.685
Re (Ohms)	3.66
Le (mH)	1.845
Z (ohms)	4.392
Qts	0.62
no (%)	0.255
1-W SPL (dB)	86.22
2.8 V SPL (dB)	89.61

Subwoofers – SW1051 Information

SW1051

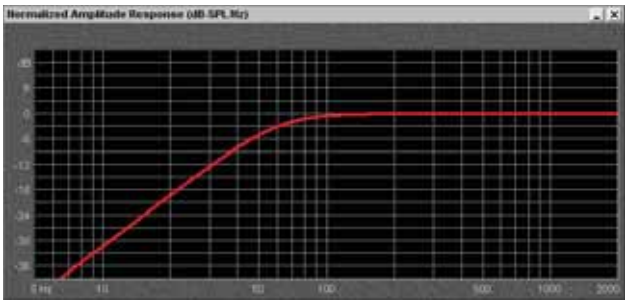
10" SINGLE VOICE COIL SUBWOOFER

- Polypropylene Electrolytic Spun Aluminum Dust Cap
- Nitrile Butadiene Rubber High Excursion Surround
- Dual Strontium Ferrite Magnets
- Hyper Extended Pole Piece
- Linear Cotton Spider
- Custom Stamped Steel Powder Coated Chassis
- Vented Pole Piece

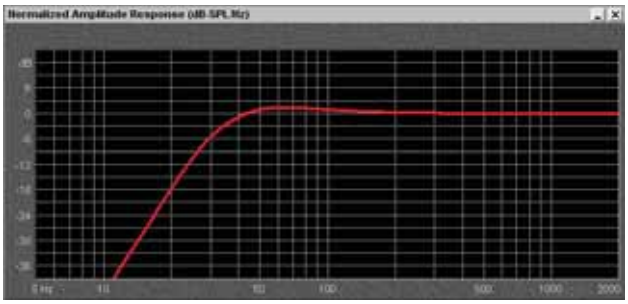
Subwoofer Class	10"
Mounting Hole	9-1/8"
Mounting Depth	5-3/4"
Outside Diameter	10-5/16"
Max. Peak Music	600
Continuous Power	300
Fs (Hz)	35.632
Qms	5.722
Vas (Liters)	25.761
Mms (grams)	131.93
Xmax (mm)	12
Qes	0.646
Re (Ohms)	3.64
Le (mH)	0.721
Z (ohms)	4.368
Qts	0.58
no (%)	0.174
1-W SPL (dB)	84.55
2.8 V SPL (dB)	87.97

SSW1201 Enclosures (Canadian Model)

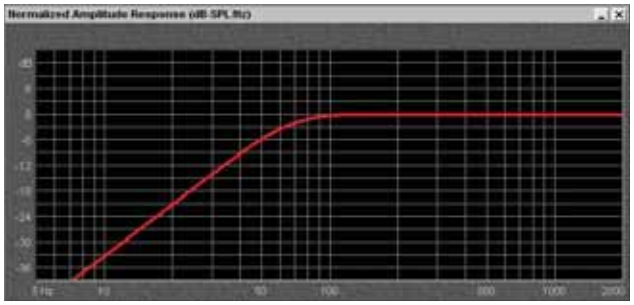
Sealed Enclosure - Sound Quality
Net Internal Air Volume: 0.7ft3
F3 Frequency: 65.84 Hz
Total System Q: 0.671



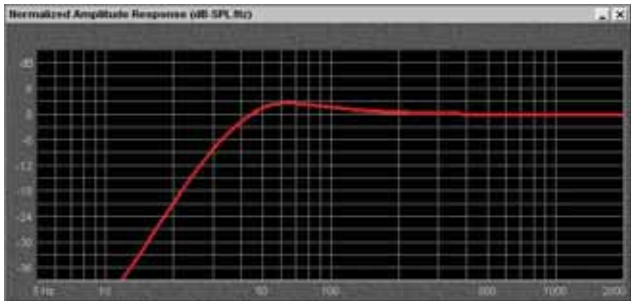
Vented Enclosure - Street
Net Internal Air Volume: 1.5
Vent Dimension: 3" ID x 7.75" long
F3 Frequency: 34.52 Hz



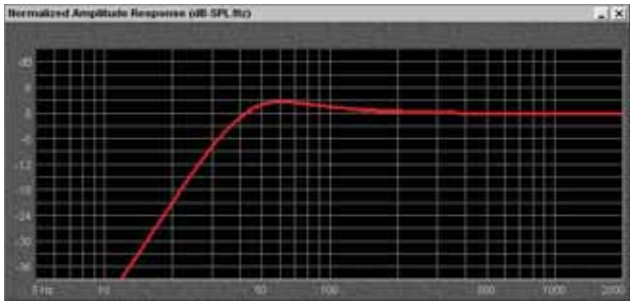
Sealed Enclosure - Compact
Net Internal Air Volume: 0.5 ft3
F3 Frequency: 63.32 Hz
Total System Q: 0.772



Vented Enclosure - Dual Driver High Output (common chamber)
Net Internal Air Volume: 2.5 ft3
Vent Dimension: 4" ID x 4.8" long
F3 Frequency: 37.75 Hz

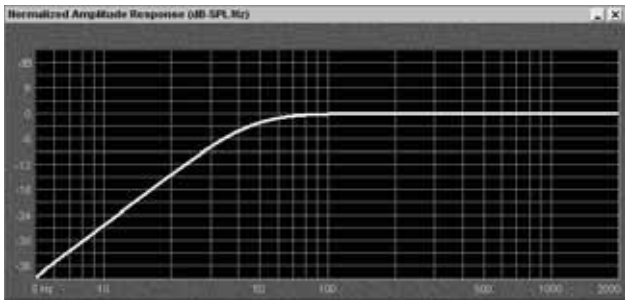


Vented Enclosure - High Output
Net Internal Air Volume: 1.4 ft3
Vent Dimension: 4" ID x 11.75" long
F3 Frequency: 36.51 Hz

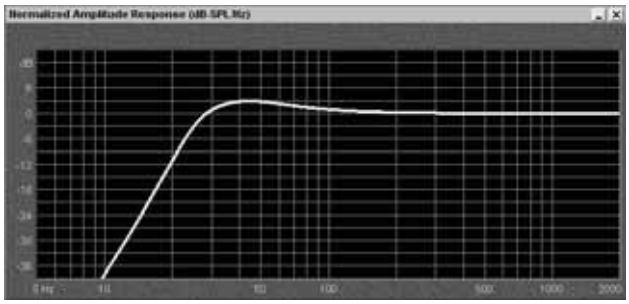


SSW1001 Enclosures (Candian Model)

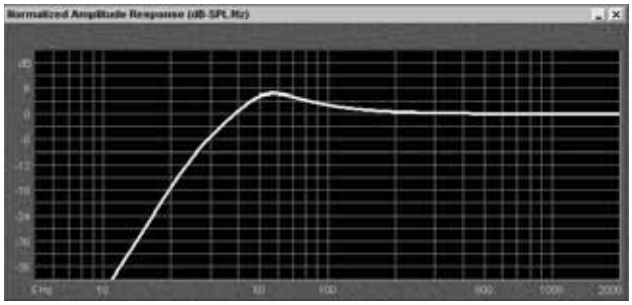
Sealed Enclosure - Sound Quality
Net Internal Air Volume: 0.5ft3
F3 Frequency: 48.4
Total System Q: 0.675



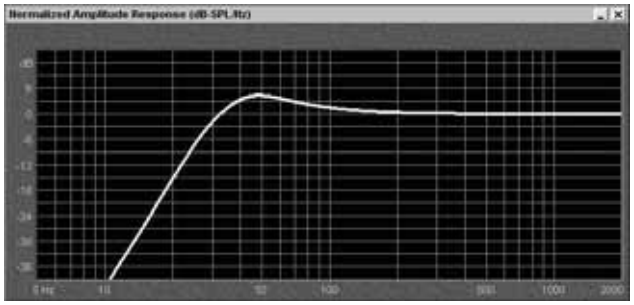
Vented Enclosure - Sound Quality
Net Internal Air Volume: 1.0
Vent Dimension: 3" ID x 19" long
F3 Frequency: 25.09 Hz



Vented Enclosure - High Output
Net Internal Air Volume: 0.5ft3
Vent Dimension: 3" ID x 24.675" long
F3 Frequency: 33.64Hz



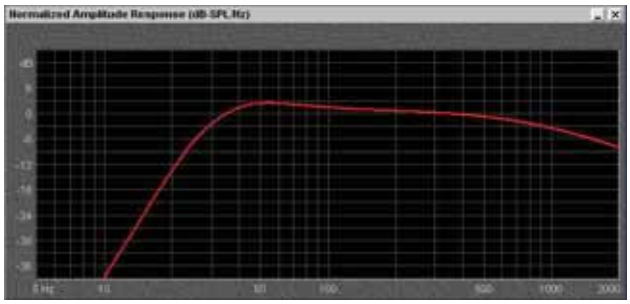
Vented Enclosure - Dual Driver High Output (common chamber)
Net Internal Air Volume: 1.5 ft3
Vent Dimension: 4" ID x 15.125" long
F3 Frequency: 28.91 Hz



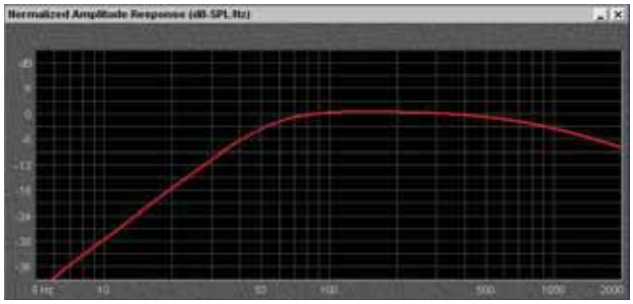
PXW1051/1052 Enclosure Designs

Sealed Enclosure - Street
Net Internal Air Volume: 0.5ft3
F3 Frequency: 52.12Hz
Total System Q: 0.719

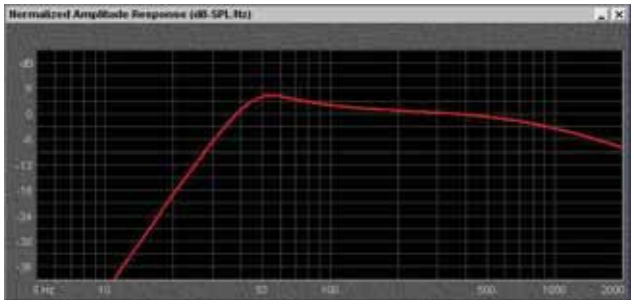
Vented Enclosure - Sound Quality
Net Internal Air Volume: 1.0
Vent Dimension: 2.5" ID x 11-1.8" long
F3 Frequency: 29.29 Hz



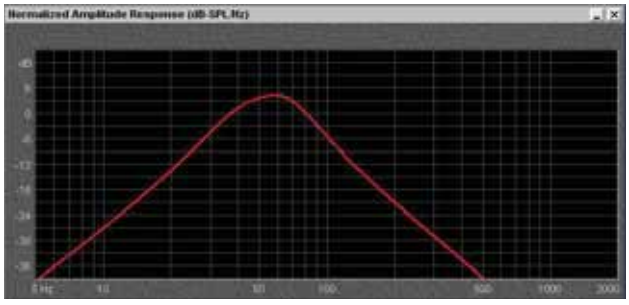
Dual Sealed Enclosure - 2 x PXW1051/1052
Net Internal Air Volume: 0.9ft3
F3 Frequency: 52.64Hz
Total System Q: 0.741



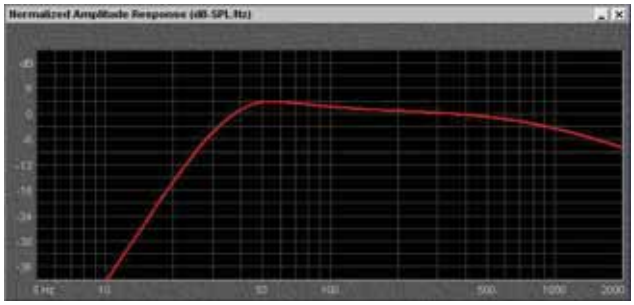
Vented Enclosure - Street
Net Internal Air Volume: 1.0 ft3
Vent Dimension: 3" ID x 9-3/8" long
F3 Frequency: 34.18 Hz



Bandpass Enclosure - SPL
Sealed Chamber Net Air Volume: 0.75 ft3
Vented Chamber Net Air Volume: 0.8 ft3
Vent Dimension: 4" ID x 10-1/2" long
F3 Frequency: 39.67 Hz



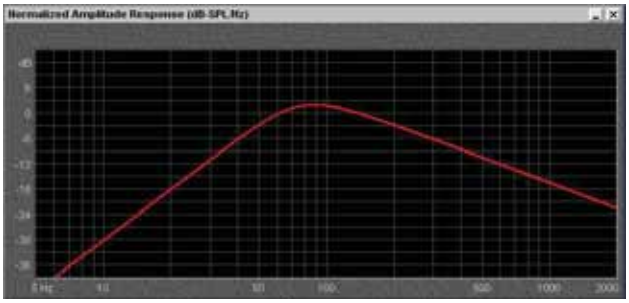
Dual Vented Enclosure - 2 x PXW1051/1052 Vented Street
Net Internal Air Volume: 2.0 ft3
Vent Dimension: 4" ID x 10-3/8" long
F3 Frequency: 30.5 Hz



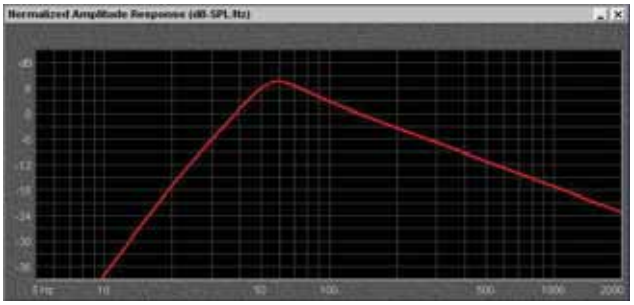
PXW1251/1252 Enclosures

PXW1251/1252 Enclosure Designs

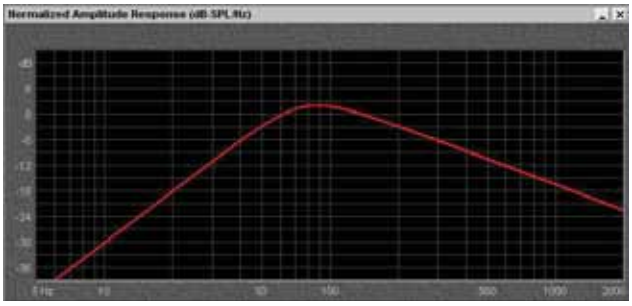
Sealed Enclosure - Sound Quality
Net Internal Air Volume: 0.83ft3
F3 Frequency: 49.15Hz
Total System Q: 0.899



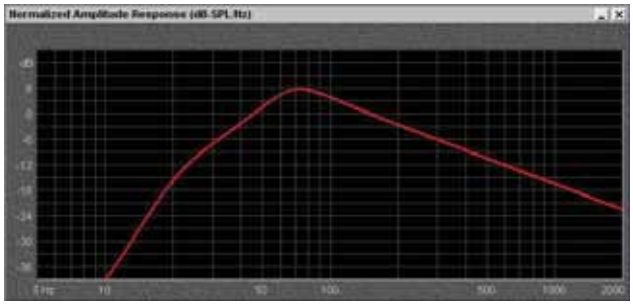
Vented Enclosure - SPL
Net Internal Air Volume: 2.0 ft3
Vent Dimension: 4" ID x 6-0" long
F3 Frequency: 33.84 Hz



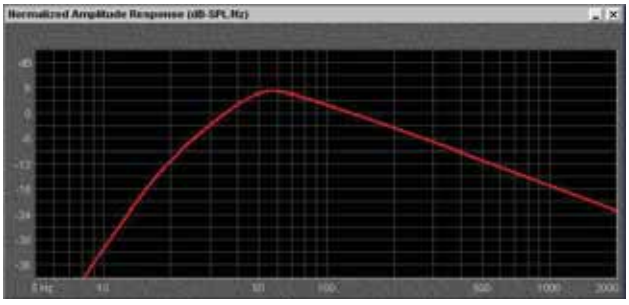
Dual Sealed Enclosure - 2 x PXW1251/1252
Net Internal Air Volume: 1.6ft3
F3 Frequency: 549.61Hz
Total System Q: 0.904



Dual Vented Enclosure - 2 x PXW1251/1252 - Street
Net Internal Air Volume: 3.5 ft3
Vent Dimension: 4" ID x 6-1/2" long
F3 Frequency: 38.34 Hz



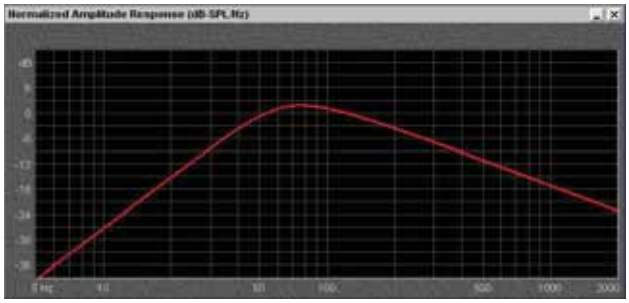
Vented Enclosure - Street
Net Internal Air Volume: 1.8ft3
Vent Dimension: 3" x 6-0"
F3 Frequency: 32.48Hz



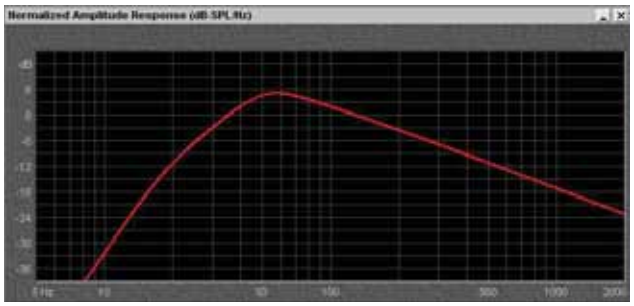
PXW1552 / PFW1051 Enclosures

PXW1552 Enclosure Designs

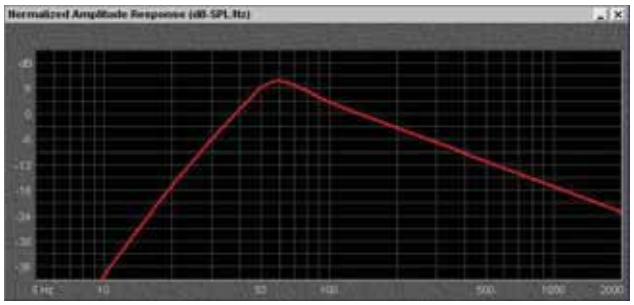
Sealed Enclosure - Sound Quality
Net Internal Air Volume: 1.5ft3
F3 Frequency: 43.84Hz
Total System Q: 0.906



Vented Enclosure - Street
Net Internal Air Volume: 3.5 ft3
Vent Dimension: 4" ID x 6-3/4" long
F3 Frequency: 29.73 Hz
Vented Enclosure - SPL

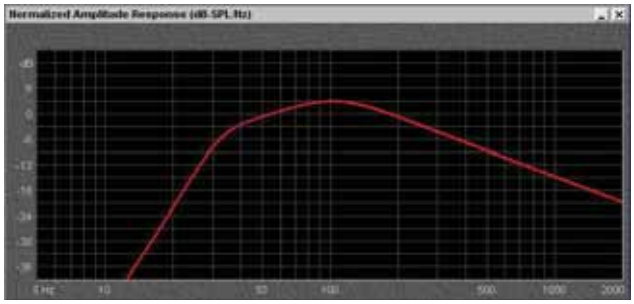


Net Internal Air Volume: 3.5 ft3
Vent Dimension: 2 x 4" ID x 6-5/8" long
F3 Frequency: 33.93 Hz



PFW1051 Enclosure Designs

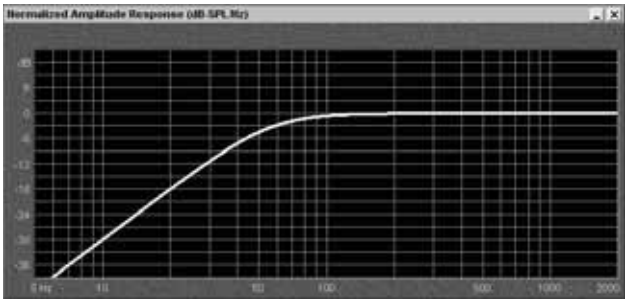
Vented Enclosure
Net Internal Air Volume: 0.5 ft3
Vent Dimension: 2" ID x 9"" long
F3 Frequency: 53.2 Hz



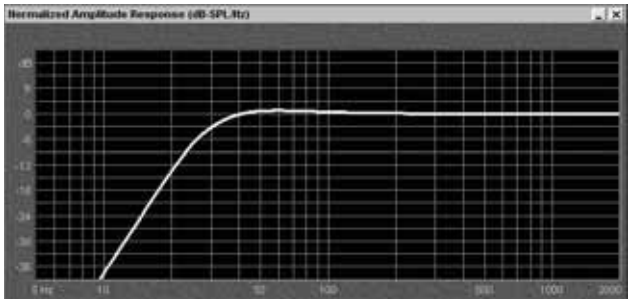
Sealed Enclosures are not recommended for this driver.

SRW1051 / SRW1052 Enclosures

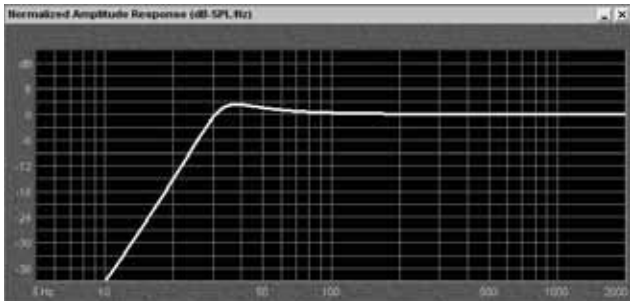
Sealed Enclosure - Sound Quality
Net Internal Air Volume: 0.5 ft3
F3 Frequency: 61.94 Hz
Total System Q: 0.61



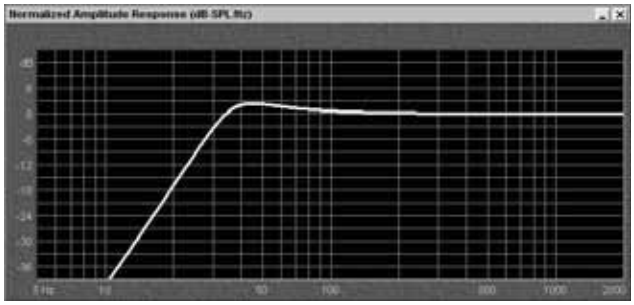
Vented Enclosure - Sound Quality
Net Internal Air Volume: 1.0 ft3
Vent Dimension: 3/4" x 12" x 26"
F3 Frequency: 30.68 Hz



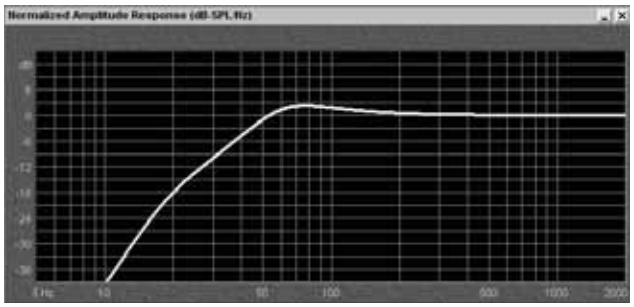
Dual Driver Vented Enclosure - Street
Net Internal Air Volume: 1.75 ft3
Vent Dimension: 4" ID x 15" long
F3 Frequency: 27.93 Hz



Dual Driver Vented Enclosure - Street
Net Internal Air Volume: 2.5 ft3
Vent Dimension: 4" ID x 7" long
F3 Frequency: 30.59 Hz

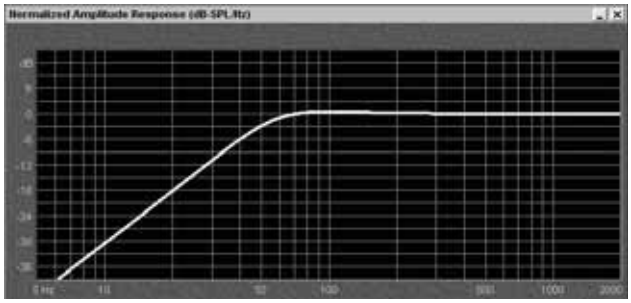


Vented Enclosure - Compact
Net Internal Air Volume: 0.8 ft3
Vent Dimension: 2.54" ID x 11.5" long
F3 Frequency: 44.31 Hz

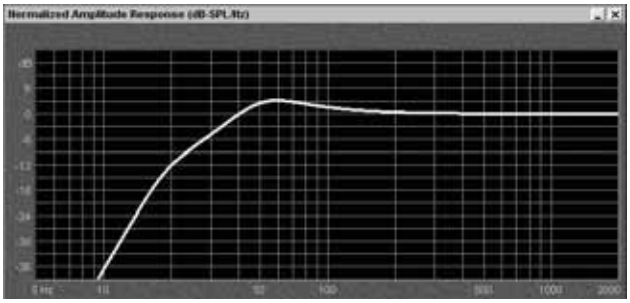


SRW1251 / SRW1252 Enclosures

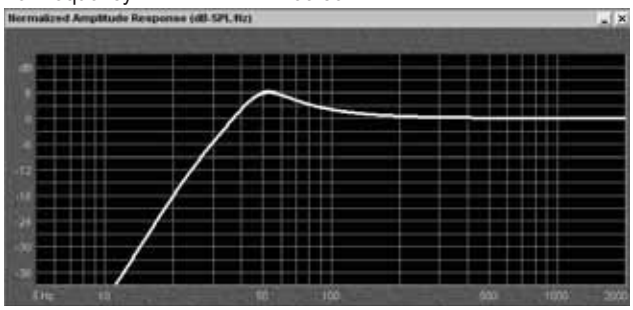
Sealed Enclosure - Sound Quality
Net Internal Air Volume: 0.8 ft3
F3 Frequency: 49.52 Hz
Total System Q: 0.866



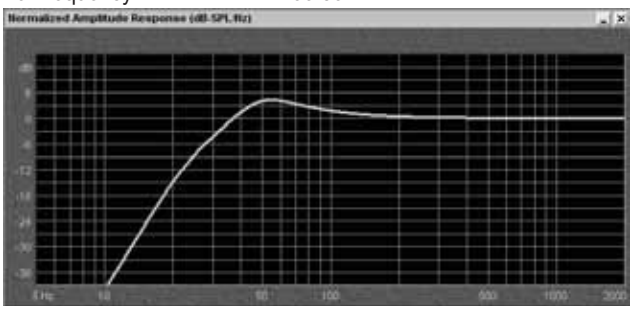
Vented Enclosure - Sound Quality
Net Internal Air Volume: 1.5 ft3
Vent Dimension: 3" ID x 12" long
F3 Frequency: 33.81 Hz



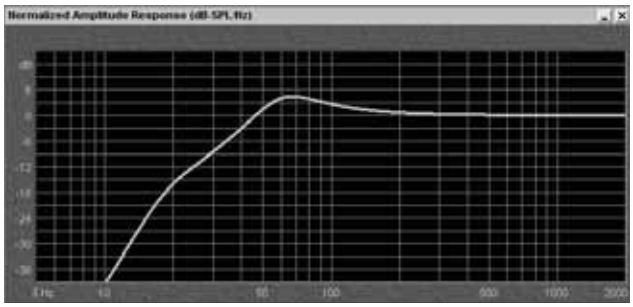
Vented Enclosure - SPL
Net Internal Air Volume: 2.0 ft3
Vent Dimension: 4" ID x 7" long
F3 Frequency: 33.08 Hz



Dual Driver Vented Enclosure
Net Internal Air Volume: 3.5 ft3
Vent Dimension: 4" ID x 4.25" long
F3 Frequency: 33.08 Hz



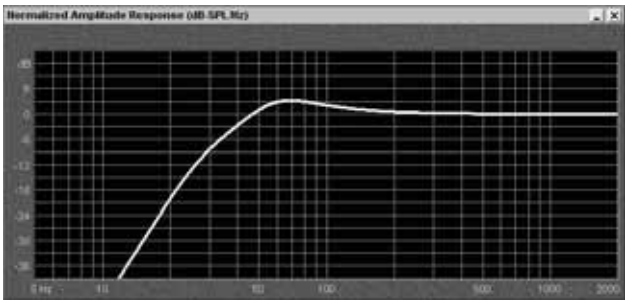
Vented Enclosure - Compact
Net Internal Air Volume: 1.0 ft3
Vent Dimension: 3" ID x 13" long
F3 Frequency: 33.08 Hz



SFW1051 Enclosure

Vented Enclosure

Net Internal Air Volume:	0.5 ft3
Vent Dimension:	2" ID x 9" long
F3 Frequency:	39.47 Hz

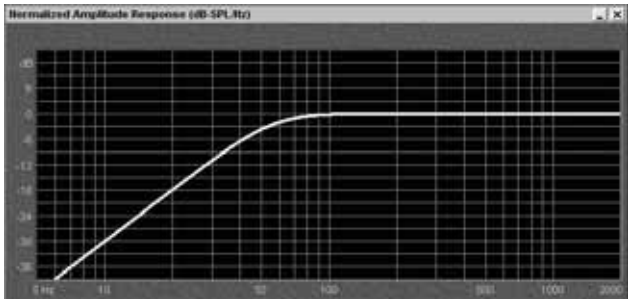


Sealed Enclosures are not recommended for this driver.

SW1051 Enclosures

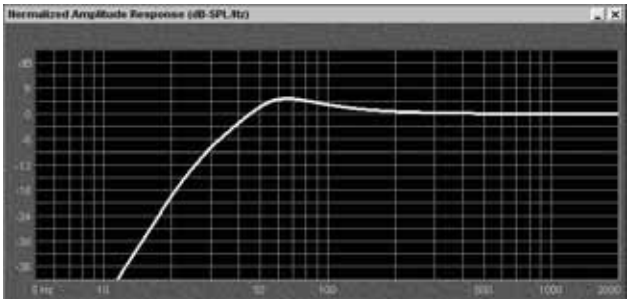
Sealed Enclosure - Sound Quality

Net Internal Air Volume: 0.5 ft3
F3 Frequency: 53.66 Hz
Total System Q: 0.743



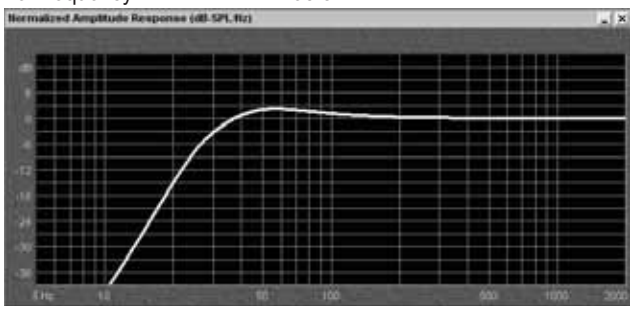
Vented Enclosure - Street

Net Internal Air Volume: 0.65 ft3
Vent Dimension: 3" ID x 16" long
F3 Frequency: 38.56 Hz



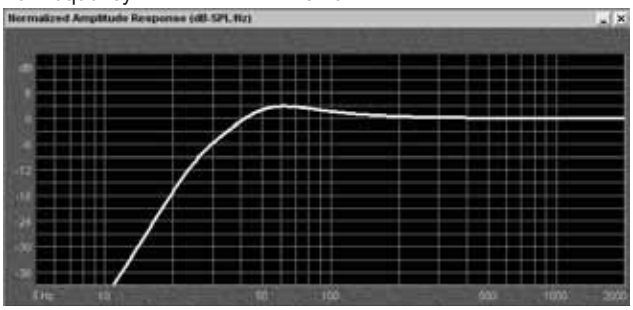
Vented Enclosure - Street

Net Internal Air Volume: 1.1 ft3
Vent Dimension: 3" ID x 13.5" long
F3 Frequency: 30.61 Hz



Dual Driver Vented Enclosure

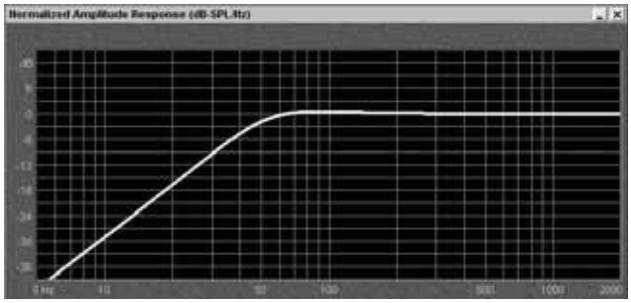
Net Internal Air Volume: 1.6 ft3
Vent Dimension: 4" ID x 13" long
F3 Frequency: 40.73 Hz



SW1251 Enclosures

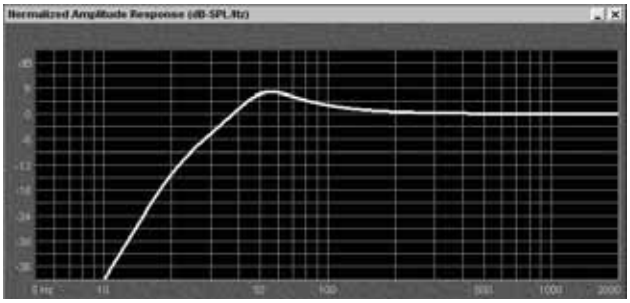
Sealed Enclosure - Sound Quality

Net Internal Air Volume:	0.9 ft3
F3 Frequency:	45.4 Hz
Total System Q:	0.87



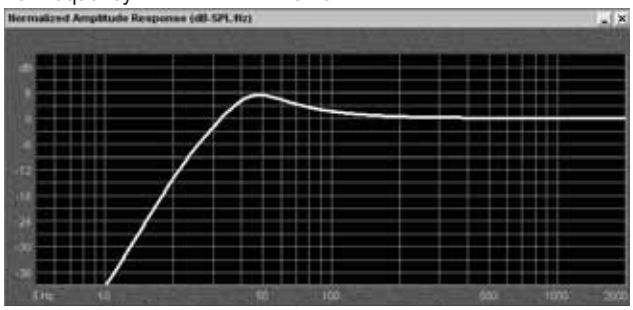
Vented Enclosure - Street

Net Internal Air Volume:	1.5 ft3
Vent Dimension:	3" ID x 7.8" long
F3 Frequency:	32.87 Hz



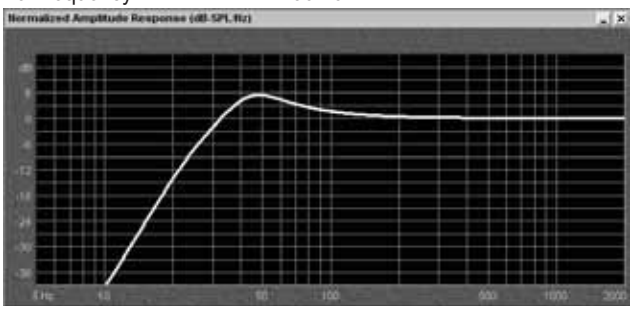
Vented Enclosure - SPL

Net Internal Air Volume:	2.25 ft3
Vent Dimension:	4" ID x 8.75" long
F3 Frequency:	32.87 Hz



Dual Driver Vented Enclosure

Net Internal Air Volume:	3.0 ft3
Vent Dimension:	4" ID x 4" long
F3 Frequency:	35.45 Hz



Subwoofer Enclosures

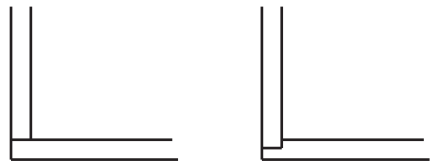
Subwoofer Enclosures

Clarion Pre-loaded subwoofer enclosures

Today's Car Audio specialist doesn't always have the time to design and construct the perfect subwoofer system, yet his or her customers demand the best possible performance for their dollar. Clarion comes to your rescue with a complete line of pre-loaded subwoofer enclosures - designed and manufactured in Canada to offer the best possible performance from your Clarion subwoofers.

Construction

Clarion Subwoofer enclosures are constructed from 3/4-inch hardwood MDF. This wood offers much higher density throughout the material as compared to most off-shore sourced products. The result is in an enclosure that is well damped for tight, accurate, uncolored music reproduction.



Where two panels meet at right angles, Clarion subwoofer enclosures use Rabbet construction. This increases the surface area of the connection to offer more strength, and an improved seal.

Design

Each Clarion Subwoofer enclosure is designed specifically for the driver that is included with it. No compromises were made during the design - offering the best possible balance of output, extension and dynamic response. Generic subwoofer enclosures don't always offer this balance, reducing your customers enjoyment and satisfaction.

In many instances, generic subwoofer enclosures are not acceptable for use with some drivers. This may void the warranty on your subwoofer.

Cosmetics

Clarion Subwoofer enclosures don't just look good, they are designed to last. The enclosures are wrapped in tough carpet for a clean look. The front panels of the enclosures feature polyethylene vinyl wrapping. This vinyl wrap not only adds style to the enclosure, but its tough surface resists scuffs and scratches commonly associated with painted enclosures. Clarion subwoofer enclosures also feature a silver Clarion gel badge and engraving to complete the package.

Flexibility

Clarion Subwoofer enclosures are offered in many combinations to maximize the performance of your audio system. Our single 10" and single 12" PXW series enclosures are offered in 4 Ohm or 2 Ohm designs. Match these enclosures to your amp for maximum output.

Ease of installation

Clarion subwoofer enclosures feature recessed five-way binding post terminals. This provides a protected electrical connection while allowing easy access should the enclosure need to be removed for any reason.

Subwoofer Enclosures

PX1125P4

SINGLE 12" PORTED SUB ENCLOSURE - 4 OHMS

• Includes PXW1251 Subwoofer

Measurements:

Width	24.25
Height	13.625
Depth(top)	13.25
Depth(bottom)	15.75

PX1125P2

SINGLE 12" PORTED SUB ENCLOSURE - 2 OHMS

• Includes PXW1252 Subwoofer

Measurements:

Width	24.25
Height	13.625
Depth(top)	13.25
Depth(bottom)	15.75

PX1105P4

SINGLE 10" PORTED SUB ENCLOSURE - 4 OHMS

• Includes PXW1051 Subwoofer

Measurements:

Width	19.375
Height	11.375
Depth(top)	12.5
Depth(bottom)	13.75

PX1105P2

SINGLE 10" PORTED SUB ENCLOSURE - 2 OHMS

• Includes PXW1052 Subwoofer

Measurements:

Width	19.375
Height	11.375
Depth(top)	12.5
Depth(bottom)	13.75

PX1105PTR4

SINGLE 10" PORTED SUB ENCLOSURE FOR PICK-UP TRUCK

• Includes PFW1051 Subwoofer - 4 Ohm Net Load

Measurements:

Width	23
Height	15.25
Depth(top)	5
Depth(bottom)	6.75

PX2125P

DUAL 12" PORTED SUB ENCLOSURE - 4 OHMS

• Includes 2 PXW1252 Subwoofers

Measurements:

Width	32.125
Height	14.875
Depth(top)	15.5
Depth(bottom)	18.25

PX2105P

DUAL 10" PORTED SUB ENCLOSURE - 4 OHMS

• Includes 2 PXW1052 Subwoofers

Measurements:

Width	30.25
Height	12.625
Depth(top)	13.75
Depth(bottom)	17

PX2105PTR2

DUAL 10" PORTED SUB ENCLOSURE FOR PICK-UP TRUCK

• Includes 2 PFW1051 Subwoofers - 2 Ohm Net Load

Measurements:

Width	45.125
Height	15.25
Depth(top)	15
Depth(bottom)	6.75

SW1125P

SINGLE 12" PORTED SUB ENCLOSURE - 4-OHMS

• Includes SW1251 Subwoofer
* May not be exactly as shown

Measurements:

Width	24.25
Height	13.75
Depth(top)	11.25
Depth(bottom)	15.625

SW1105P

SINGLE 10" PORTED SUB ENCLOSURE - 4-OHMS

• Includes SW1051 Subwoofer
* May not be exactly as shown

Measurements:

Width	19.25
Height	11.25
Depth(top)	9.25
Depth(bottom)	11.5

Wired remote control

SRV314

SLIM DESIGN 6-3/4"" POWERED SUBWOOFER

• Maxx Bass circut for virtual bass enhancer • Dual Voice Coil • 120 W High Powered amplifier • Remote control for gain control/Low-Pass Filter (selectable 50/75/100/120Hz)/phase select

Measurements:

Width	24.25
Height	13.625
Depth(top)	13.25
Depth(bottom)	15.75

Subwoofer Enclosures

SR2125P

DUAL 12" PORTED SUB ENCLOSURE - 4 OHMS

• Includes 2 SRW1252 Subwoofers

Measurements:

Width	32.25
Height	14.875
Depth(top)	13
Depth(bottom)	15.75

SR2105P

DUAL 10" PORTED SUB ENCLOSURE - 4 OHMS

• Includes 2 SRW1052 Subwoofers

Measurements:

Width	30.25
Height	13.25
Depth(top)	12.5
Depth(bottom)	14.75

SR1125P

SINGLE 12" PORTED SUB ENCLOSURE - 4-OHMS

• Includes SRW1251 Subwoofer

Measurements:

Width	24.25
Height	13.75
Depth(top)	11.25
Depth(bottom)	14.625

SR1105P

SINGLE 10" PORTED SUB ENCLOSURE - 4-OHMS

• Includes SRW1051 Subwoofer

Measurements:

Width	19.25
Height	13.75
Depth(top)	12.25
Depth(bottom)	10.375

SR1125S

SINGLE 12" SEALED SUB ENCLOSURE - 4-OHMS

• Includes SRW1251 Subwoofer

Measurements:

Width	18.5
Height	13.75
Depth(top)	12.25
Depth(bottom)	7.875

SR1105S

SINGLE 10" SEALED SUB ENCLOSURE - 4-OHMS

• Includes SRW1051 Subwoofer

Measurements:

Width	15.75
Height	12.25
Depth(top)	6.625
Depth(bottom)	8.75

SR1105PTR4

SINGLE 10" PORTED SUB ENCLOSURE FOR PICK-UP TRUCK

• Includes SFW1051 Subwoofer - 4 Ohm Net Load

Measurements:

Width	23
Height	15.25
Depth(top)	5
Depth(bottom)	6.75

Enclosure Part Number Decoder:

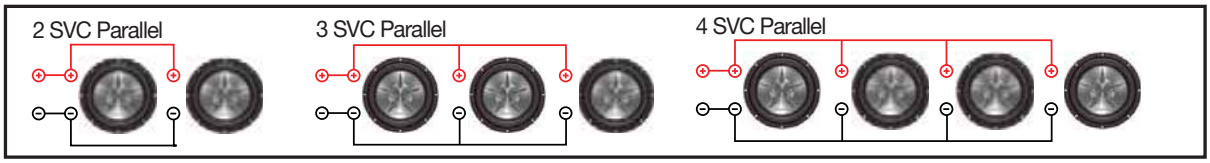
PX1105STR4

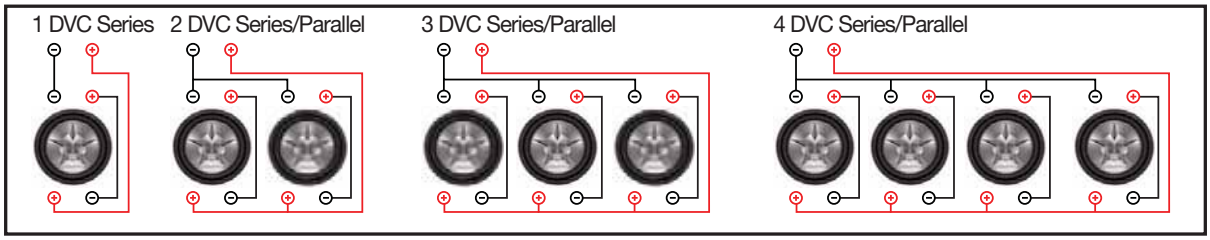
Model	Quantity	Size	Series	Design	Custom	Net Load
SW	1	10	5	Ported or	A - Amplified	2 Ohms
SRW	2	12		Sealed	TR - Truck Box	4 Ohms
PXW		15			Box - no sub incl.	

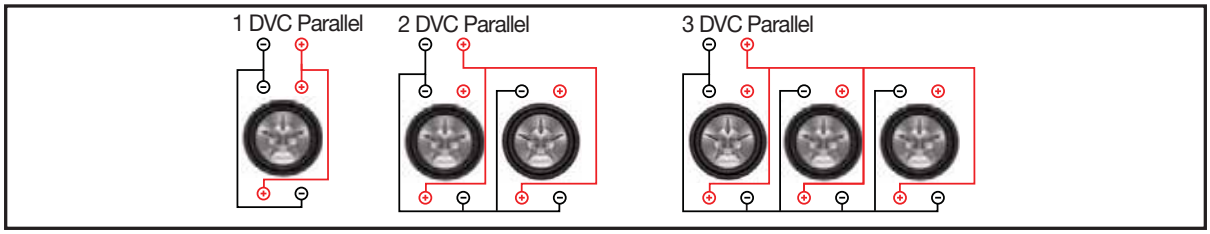
Clarion

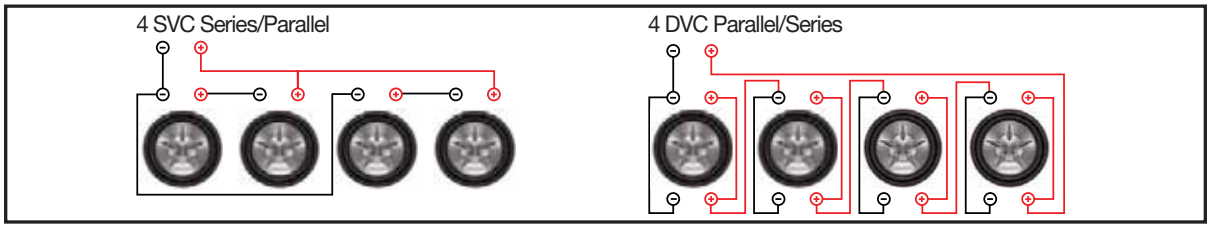
THE CLARION BASS BOOK

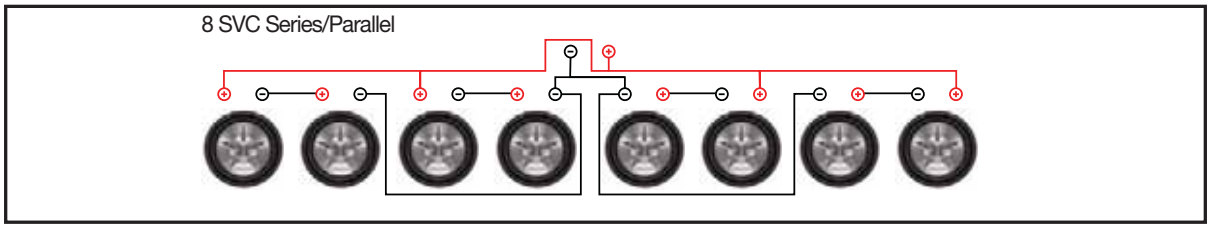
WOOFER WIRING DIAGRAMS











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Subwoofer to Amplifier Chart

		SW Subwoofers		SRW Subwoofers							PXW				
		SW1051	SW1251	SFW1051	SRW1051	SRW1052		SRW1251	SRW1252		PFW1051	PXW1051		PXW1052	
VC Wiring						Series	Parallel		Series	Parallel		Series	Parallel	Series	Parallel
Impedance		4	4	4	4	8	2	4	8	2	4	4	1	8	2
Amplifiers	**APX2121**[1]	1	1	1	1			1							
	APX4241	1	1	1	1			1							
	APX1301	1/2	1/2	1/2	1/2	2/3/4	1	1/2	2/3/4	1	1/2	1/2		2	1
	APX2181[1]	1	1	1	1	2		1	2		1	1		2	
	APX4361[2]	1	1	1	1	2		1	2		1	1		2	
	DPX2251[1]	4[3]	4[3]	4[3]	4[3]	2		4[3]	2		4[3]	1	4[4]	2	
	DPX1851	4	4	3/4	2/3	4		2/3	4		3/4	2/3		4	1
	DPX11551	8[5]	8[5]	8[5]	8[5]	4			4			2/3		4	

How to use this Chart:

1- Select the amplifier you want to use.

2- Look across the row to see which subwoofers are compatible, and in what configuration

4- Install, Tune and Enjoy.

Notes:

1 - 2 Channel amplifiers are to be Bridged.

2 - 4 Channel amplifiers, rear channels used for subwoofers. Front Channels run High-Pass with Full range speakers

3 - See 4 SVC Series/Parallel Diagram

4 - See 4 DVC Parallel/Series Diagram

5 - See 8 SVC Series/Parallel Diagram

Subwoofer to Amplifier Chart

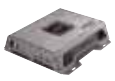
PXW Subwoofers											Signature Series			
PFW1051	PXW1051		PXW1052		PXW1251		PXW1252		PXW1552		SSW1001		SSW1201	
	Series	Parallel	Series	Parallel	Series	Parallel	Series	Parallel	Series	Parallel	Series	Parallel	Series	Parallel
4	4	1	8	2	4	1	8	2	8	2	8	2	8	2
1/2	1/2		2	1	1/2		2	1		1				
1	1		2		1		2							
1	1		2		1		2							
4[3]	1	4[4]	2		1	4[4]	2		2					
3/4	2/3		4	1	2/3		4	1	4	1		1		1
	2/3		4		2/3		4		4	2	3/4	2	3/4	2

Important Information

All multiple woofer configurations have woofers connected to each other in Parallel unless noted.

DVC woofer voice coils are to be wired as noted in **VC WIRING** row, to show impedance as noted in the inpedance row.

Enclosure to Amplifier Chart

	DPX11551	DPX1851	DPX2251	APX4361	APX2181	APX1301	APX4241	APX2121
								
SW1105P				320w	320w	300w	160w	160w
SW1125P				320w	320w	300w	160w	160w
SR1105PTR4				320w	320w	300w	160w	160w
SR1105S				320w	320w	300w	160w	160w
SR1125S				320w	320w	300w	160w	160w
SR1105P				320w	320w	300w	160w	160w
SR1125P				320w	320w	300w	160w	160w
SR2105P		460w	650w	320w	320w	300w		
SR2125P		460w	650w	320w	320w	300w		
PX1105PTR4				320w	320w	300w		
PX2105PTR2						400w		
PX1105P2						400w		
PX1105P4		460w	650w	320w	320w	300w		
PX1125P2		850w				400w		
PX1125P4		460w	650w	320w	320w	300w		
PX2105P	850w	460w	650w	320w	320w	300w		
PX2125P	850w	460w	650w	320w	320w	300w		

How to use this Chart:

1- Select the enclosure that will fit in the vehicle.

2- Look across the row and select an amplifier based on the desired power output level.

3- Install, Tune and Enjoy.

Speakers

Speakers

2008 Clarion Speakers

New Speaker Series

The 2008 speaker line offers better value and performance through advanced material application and new designs. The differentiation between each of our five speaker series means that it's easy to allow a custom to 'step up' the performance of their system. Here's a breakdown of the general features of each series:

Good Series
OEM Replacement speakers
MIPP (Mica Injected Polypropylene woofer cones)
PEI (Poly Ether Imide) Tweeter
Stamped Steel Chassis
Strontium Ferrite Magnet
Stylized Spoked Grill
High Efficiency Design Motor

Quality Series
OEM Upgrade Speakers
TM - MIPP (Titanium Metalized MIPP woofer cones)
Silk Soft Dome Midrange and Tweeters
Rubber Woofer Surround
Stamped Steel Chassis
Stylized Grill with Mesh Insert
In-line crossover on SRQ1320S/SRQ1620S

Platinum Series
High End Aftermarket Speakers
Glass Fiber woofer cones
Silk Soft Dome Tweeter
Rubber Woofer Surround
Cast Aluminum Chassis
Stylized Grill with Mesh insert
2-Way external Passive Crossover Networks
Removable Phase Plug
MultiFit Design

Ultra Series
Competition Level Speakers
Titanium Impregnated Glass Fiber Woofer Cone
Silk Soft Dome Tweeter
Rubber Woofer Surround
2-Piece Cast Aluminum chassis with SET
Stylized Grill with Mesh Insert
Upgrade 2-Way Passive Crossover Networks
Removable Phase Plug
MultiFit Design

Signature Series
Audiophile Speakers
Glass Fiber/PMI Foam Composite Cone Woofer
Inverted Titanium Tweeter with phase plug
Ferrofluid damping and cooling in tweeter
Rubber Woofer Surround
Cast Aluminum Chassis
2-Way Passive Crossover Network with Amplifier Protection Circuit

New Speaker Model Numbers

During the design phase of the new 2008 Clarion speakers, a conscious effort was made to better differentiate each of the speaker series from oneanother in terms of features, performance and their part numbers. For 2008, we offer five different series of speakers.

To simplify the differentiation between the speaker lines, Clarion has redeveloped the speaker naming convention to provide more information about the product itself.

The options for each category are as follows:

Series:	G - Good Q - Quality P - Platinum U - Ultra S - Signature
Size:	2 - 3/4" 3 - 1" 9 - 3-1/2" 10 - 4" 13 - 5-1/4" 16 - 6-1/2" 17 - 6-3/4" 4x6" 6x9"
Designs:	2 - 2-Way 3 - 3-Way
Desciptors:	R - Regular C - Custom - no grills included S - Separates H - High Frequency Only M - MultiFit

Using this information, you know the series, size, design and application of each speaker in the line, making it easier to understand our extensive product offerings.

Let's look at a the SRQ1630R as an example. Each letter and number of the product part has a meaning.

SR - Retail Speaker
Q - Series - Quality
16 - Size - 160mm (6.5")
3 - Design - 3-Way
0 - Generation - First year
R - Descriptor - Regular

MultiFit
Clarion introduces a simple and elegant solution to a problem that most car audio retailers didn't know they had - MultiFit. The MultiFit concept is not new to Clarion, but it's breadth has been expanded to serve you even better.

The MultiFit concept is quite simple - a speaker system that fits multiple applications without the need for additional hardware.

The reasoning behind the concept is to allow car audio retailer to stock fewer different SKUs, while still being able to offer a solution for each application.

Here's an example of how MultiFit works. The SRP1620M kit includes a pair of 6.5" woofers, a pair of 3/4" tweeters, plastic grills, mesh grill inserts, a pair of passive crossover networks, 6x8" adapter plates and GM Chrysler adapters. The tweeter includes surface and flush mounting hardware. You can mount the tweeter as a component, anywhere you want with respect to the midrange. Or you can remove the phase plug from the center of the midrange driver and install the tweeter in its place to create a coaxial driver.

With all these parts included, the SRP1620M is a 6-1/2" Component Set, 6-1/2" Coaxial Set and 6x8" plate Speaker Set

Of course, you can mix and match, so you can use the woofer on the 6x8" adapter plate and mount the tweeter either coaxially or as a separate to potentially improve the soundstage.

The MultiFit concept has been applied to six speaker models across the Ultra and Platinum series of the speakers.

CEA-2031 Compliance
Just as the Consumer Electronics Association revolutionized amplifier power specifications with CEA-2006, so to have they begun to make an impact on speaker specifications. All new 2008 Clarion speakers are compliant with the newly introduce CEA-2031 Mobile Speaker standard. This CEA-2031 logo assures that the speaker has been testing using methods that are in accordance with the standards. These specifications include: Power Handling in Watts. Maximum power handling, Cut-out Diameter, mounting depth, diameter and impedance.

Environmentally Friendly
Clarion is commited to maintaining our ISO14001 environmental standards certification. This is acheived by ensuring that our products are produced in a manner that reduces or eliminates a detrimental impact on the environment. One of the simplest changes we have made is to implement the use of lead-free solder in the manufacturing of all of our loudspeakers.

Designed and Tested to Last
To remain a world leader in the car audio industry, Clarion has established a set of in-house

quality control criteria to ensure our products meet our customers expectations for performance and longevity.

All of Clarion's 2008 speakers went through a fine-tuning process at our head office in Tokyo Japan. These listening sessions were not only attended by the speaker enigneers that designed the products, but also by staff from our offices in the USA and Canada.

Although listening is a critical part of the design process, so to are our efforts to ensure the speakers will last. Each Clarion speaker is tested to ensure it will be able to perform without failure for 100 hours when being driven at it's Continuous Rated power rating. This ensures the speakers meet their specifications, and that you know when you sell a set of speakers to a customer, he is going to enjoy them for years and years.

Signature Series - Audiophile design and performance

Signature Series component sets were designed to offer discerning listeners the best in mobile sound reproduction. The materials used in these component sets represent the state-of-the-art in terms of speaker design.

Composite Cone Design

The cone of any speaker must combine three important criteria to achieve accurate music production - mass, damping and rigidity. The Composite Cone Design used on the Signature Series speakers is essential to their incredible performance. The cone is a sandwich of glass fibre and a PMI (Polymethacrylimide) foam cone. This cone is extremely low in mass, while being rigid and well dampened at the same time.

Powder coated dampened aluminum basket
Providing a stable platform for the speaker to work from is critical. The cast and powder coated aluminum baskets used in the Signature Series speakers feature a low resonance design and incredible strength.

Rubber Surround

Signature Series speakers feature a rubber surround for enhanced flexibility, low distortion and reliability. This surround also provides damping to the cone to reduce resonance and colouration.

4-layer CCAW Voice Coil winding

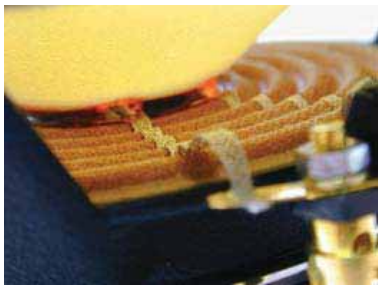
The Signature Series components employ a four-layer Copper Clad Aluminum Wire voice coil winding design. This design is low in mass, but helps create an intense magnetic field, further improving transient response.

Fixed Phase Plug

Instead of a conventional dust cap, the Signature Series component speakers employ a fixed phase plug. This reduces moving mass for better transient performance due to the elimination of the dust cap. It also helps direct sound laterally, improving off-axis response.

Woven Tinsel Leads

To ensure the complete absence of mechanical noise, Clarion has chosen to implement tinsel leads that are woven into the spider.



Passive Crossover Network

At the heart of the Signature Series component is their passive crossover networks. These networks were designed to offer excellent frequency response, as well as good system power handling. The tweeter features an elaborate protection circuit that will prevent damage to the speaker while not upsetting the amplifier driving it.

1” Inverted Dome Titanium tweeter

Detail and accuracy in high frequencies is achieved using a 1-inch titanium dome tweeter and Neodynium magnet. The inverted dome tweeter features an integrated phase plug to excellent off-axis performance.

Ferrofluid Cooling

By injecting Ferrofluid (a non-cunductive magnetic liquid) into the voice coil gap area of the Inverted Dome Titanium Tweeter, efficiency and power handling capabilities are increased. Ferrofluid also helps to dampen resonances and reduce impedance rise at the resonant frequency.

Ultra and Platinum Series

Both the Ultra and Platinum series speakers feature many similar product features and design concepts. We will review how these different components contribute to the performance of these speakers.

Glass Fiber Woofer Cones

The purpose of the speaker cone is to act as a linear piston that compresses and rarifies the air in front of it as the motor assembly moves it back and forth.

Balancing the charactertistics of weight, rigidity and damping are the key to producing a cone that allows for excellent dynamics and smooth frequency response.

The use of Glass Fiber in the Utra and Platinum series speakers was chosen based on it's excellent strength to mass ratio and good damping characteristics.

The cones of these drivers feature a parabolic shape that further strengthens the cone and helps reduce resonance.

The result is clear and detailing midrange performance with solid and authorative bass response.

Silk Dome Tweeters

The silk dome tweeters found in the Ultra and Platinum series speakers offer smooth frequency response and good transient performance. These tweeters are powered by a Neodymium magnet for improved efficiency and clarity. The result is a tweeter that is easy to listen to while still offering excellent detail and accuracy.

These speakers were designed to offer extended frequeuncy response all the way out to 50kHz. This reduces the phase shift commonly associated with tweeters that attenuate abruptly above 20kHz.

We also include Flush Mount and Surface Mount hardware with all our tweeters, so no matter what vehicle you are working on, there are mounting options to make your life easy.

Speaker Technologies

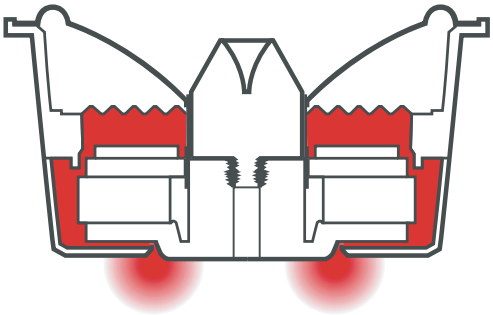
Cast Aluminum Chassis

At the heart of each and every speaker is it's chassis (basket). The Ultra and Platinum series speakers feature custom tooled cast aluminum chassis' that integrate Spider Exhaust Technology cooling.

These chassis' are very rigid, preventing chassi distortion due to installation on surfaces that are not flat.

These chassis are designed to be non-resonant. A chassis that is flimsy can cause colouration and distortion in the music.

Finally, the inclusion of Spider Exhaust Technology cooling in both the Ultra and Platinum series speakers not only helps to improve power handling, but to increase driver linearity thanks to the ability to vent air pressure from beneath the spider mounting plateau.



Powerful Motor

Each Ultra and Platinum series driver is based around a Strontium Ferrite Magnet in the motor. The use of Strontium ferrite as opposed to less expensive magnet materials such as Barium Ferrite allows for a more intense magnetic field around the voice coil. This means that the speaker will respond faster to music and be more efficient.

Another factor that directly effects driver efficiency and power handling is the air gap between the top plate and the voice coil former. Clarion specifies a very narrow gap to further improve driver efficiency. This narrow gap helps to dissipate heat from the voice coil assembly for improved power handling and reduced power compression.

Passive Crossover Network

Although the passive crossover networks found in the Platinum Series speakers look similar to their 2007 counterparts, many new features have been implemented.
The most noticeable change is the move to an incandescent lamp for tweeter protection. This provides a gradual clamping of power to the speaker instead of the old PTC switch that would disconnect the tweeter from the circuit to prevent damage dur to being overdriven.

These networks feature a third order (18dB/Octave) filter on the tweeter to allow for extended low frequency performance while maintaing good physical power handling.

A first order filter (6dB/octave) on the woofer provides a phase correct transition and allows for flexible speaker placement.

The networks include both 0dB and -3dB settings for the tweeter. This means you do your system tuning without the need to equalizers or tone controls.

Advanced Suspension System

Locating the cone and voice coil in the exact center of the magnet assembly while allowing it to move linearly is accomplished thanks to a synthetic rubber surround and Conex progressive spider.
Conex is a synthetic fiber that offers excellent thermal stability as well as abrasion resistance. This means that it can handle the high temperatures associated with high power speaker applications and not fatigue during normal use. Conex is known as meta-aramid fiber and is very similar to Nomex which was first produced by DuPont.

The rubber surround remains flexible over a wide temperature range and resists failure due to UV exposure or thermal cycling. The rubber surround also acts as a damper, helping to eliminate cone resonances.

Environmentally Friendly

Clarion is commited to maintaining our ISO14001 environmental standards certification. This is acheived by ensuring that our products are produced in a manner that reduces or eliminates a detrimental impact on the environment. One of the simplest changes we have made is to implement the use of lead-free solder in the manufacturing of all of our loudspeakers.

Quality and Good Series

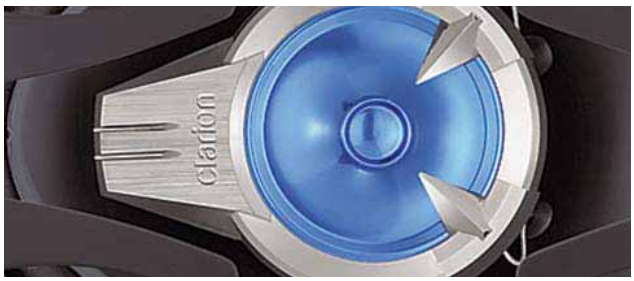
Advanced Cone Materials

The woofer cones found on all Quality and Good series speakers are made from Mica Injected Polypropylene. Unlike many speakers that are made from 'pure' polypropylene, the addition of Mica flake to the polypropylene increases the resulting materials thermal stability (resistance to deformation due to heat) and increased rigidity (known as Modulus). Many other company only offer this kind of technology on their higher end speakers.

On the Quality series speakers, these MIPP cones are treated with a Titanium Metallized coating. This coating helps to stabilize the polypropylene and protect it from the effects of UV Exposure.

Tweeter Technology

The tweeters used on the Good series of speakers are moulded from PEI (Polyether Imide). PEI is a high performance polymer plastic that offers excellent chemical and temperature stability characteristics. In fact, PEI is so dimensionally stable, parts are oftem machined from PEI as replacements for metal components in military weapon applications. PEI is a product of GE Plastics
The Quality series speakers feature a Silk Dome tweeter that is powered by a Neodymium magnet. This tweeter offers a sound that is described as 'smooth' because the silk material itself acts as a vibration damping material.



Powerful Motor

Each Ultra and Platinum series driver is based around a Strontium Ferrite Magnet in the motor. The use of Strontium ferrite as opposed to less expensive magnet materials such as Barium Ferrite allows for a more intense magnetic field around the voice coil. This means that the speaker will respond faster to music and be more efficient.

Speaker Technologies

Another factor that directly effects driver efficiency and power handling is the air gap between the top plate and the voice coil former. Clarion specifies a very narrow gap to further improve driver efficiency. This narrow gap helps to dissipate heat from the voice coil assembly for improved power handling and reduced power compression.

Application Specific Sizing

The Quality and Good series of speakers includes every common speaker size from 3-1/2" up to 6x9" and everything in between. This means that you can offer your customer a solution for any new vehicle application. The design of many of the speaker chassis includes elongated or multiple mounting holes to make installation even easier.

Signature Series Speakers (Canadian Model)

SSS501

SIGNATURE SERIES 5.25” COMPONENT SET

- 5.25" Composite Cone Design woofer
- Rubber Surround
- Solid Aluminum Fixed Phase Plug
- Powder coated cast aluminum basket
- Chrome Back Plate
- Woven Tinsel Lead
- Spring Loaded electrical connections
- 1" Inverted Titanium Dome Tweeter
- Ferrofluid cooled and damped Tweeter
- Passive Crossover with tweeter attenuation

Specifications

Continuous Power . . . . . .100 W
Maximum Power . . . . . .200 W
Frequency Response . . . . . 55 Hz to 25kHz
Mounting Depth . . . . . .2-7/16"
Cut-Out Size Width . . . . . .4-9/16"

SSS601

SIGNATURE SERIES 6.5” COMPONENT SET

- 6.5" Composite Cone Design woofer
- Rubber Surround
- Solid Aluminum Fixed Phase Plug
- Powder coated cast aluminum basket
- Chrome Back Plate
- Woven Tinsel Lead
- Spring Loaded electrical connections
- 1" Inverted Titanium Dome Tweeter
- Ferrofluid cooled and damped Tweeter
- Passive Crossover with tweeter attenuation

Specifications

Continuous Power . . . . . .100 W
Maximum Power . . . . . .200 W
Frequency Response . . . . . 40 Hz to 25kHz
Mounting Depth . . . . . .2-13/16"
Cut-Out Size Width . . . . . .5-11/16"

Speakers – Features/Specifications

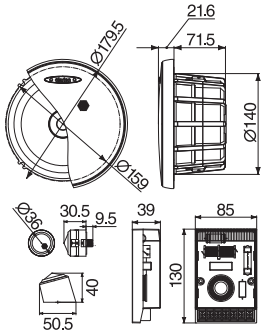
SRU1720M

6-3/4" / 6"×8" MULTIFIT SPEAKER SYSTEM

Features
- 350 Watts Maximum Music Power
- MultiFit Speaker System Design
- 6-3/4" TP-GF Cone Woofer with Rubber Surround
- 1" TP-Silk Dome Tweeter with Neodymium Magnet
- 2-Way Mounting Tweeter (Flush Mounting/Surface Mounting)
- High Grade -12dB/oct 2way Crossover Network with Level Attenuator (0,-3dB)
- Extremely High Frequency Reproduction/80kHz
- Aluminum Die-Cast Frame for Higher Power Handling and Reduced Distortion
- S.E.T.(Spider Exhaust Technology) Cooling
- Grille & Mesh Included
- Powerful Strontium Magnet for Dynamic Bass Response
- GM Fit Basket Design/6"x8" FORD Adaptor Included

Specifications

Sensitivity	89dB
Continuous Power	80 W
Maximum Power	350 W
Mounting Depth	2-13/16"
Cut-Out Size Width	140mm



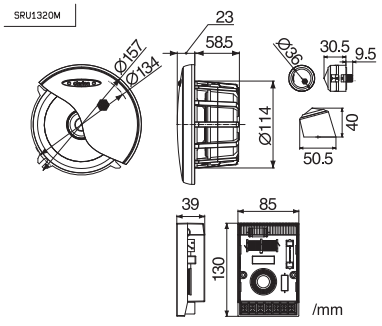
SRU1320M

5-1/4" / 5"×7" MULTIFIT SPEAKER SYSTEM

Features
- 250 Watts Maximum Music Power
- MultiFit Speaker System Design
- 5-1/4" TP-GF Cone Woofer with Rubber Surround
- 1" TP-Silk Dome Tweeter with Neodymium Magnet
- 2-Way Mounting Tweeter (Flush Mounting/Surface Mounting)
- High Grade -12dB/oct 2way Crossover Network with Level Attenuator (0,-3dB)
- Extremely High Frequency Reproduction/80kHz
- Aluminum Die-Cast Frame for Higher Power Handling and Reduced Distortion
- S.E.T.(Spider Exhaust Technology) Cooling
- Grille & Mesh Included
- Powerful Strontium Magnet for Dynamic Bass Response
- 5"x7" FORD/CHRYSLER/TOYOTA Adaptor Included

Specifications

Sensitivity	88dB
Continuous Power	80 W
Maximum Power	250 W
Mounting Depth	2-5/16""
Cut-Out Size Width	114mm



Speakers – Features/Specifications

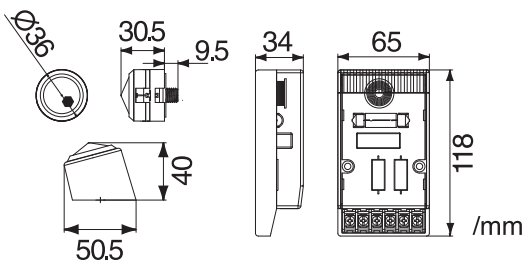
SRU310H

1" DOME TWEETER

Features
- 300 Watts Maximum Music Power
- 1" TP-Silk Dome Tweeter with Neodymium Magnet
- 2-Way Mounting Tweeter (Flush Mounting/Surface Mounting)
- High Grade -12dB/oct Crossover Network with Level Attenuator (0,-3dB,-6dB)
- Extremely High Frequency Reproduction/80kHz
- Powerful Neodymium Magnet

Specifications

Sensitivity	90dB
Continuous Power	90 W
Maximum Power	300 W
Frequency Response	2,000 Hz to 80 kHz



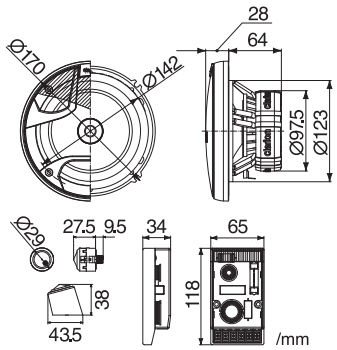
SRP1620M

6-1/2" / 6"×8" MULTIFIT SPEAKER SYSTEM

Features
- 250 Watts Maximum Music Power
- MultiFit Speaker System Design
- 6-1/2" Glass-Fiber Cone Woofer with Rubber Surround
- 3/4" Pure Silk Dome Tweeter with Neodymium Magnet
- 2-Way Mounting Tweeter (Flush Mounting/Surface Mounting)
- High Grade -12dB/oct 2way Crossover Network with Level Attenuator (0,-3dB)
- Extremely High Frequency Reproduction/50kHz
- Aluminum Die-Cast Frame for Higher Power Handling and Reduced Distortion
- S.E.T.(Spider Exhaust Technology) Cooling
- Grille & Mesh Included
- Powerful Strontium Magnet for Dynamic Bass Response
- GM Fit Basket Design/ CHRYSLER Adaptor Included
- 6"x8" FORD Adaptor Included

Specifications

Sensitivity	90dB
Continuous Power	70 W
Maximum Power	250 W
Mounting Depth	2-1/2"
Cut-Out Size Width	123mm



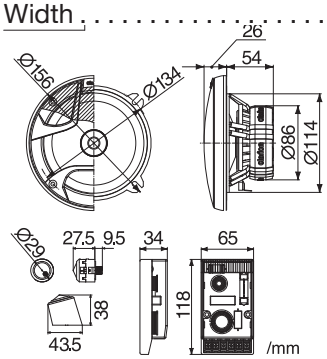
Speakers – Features/Specifications

SRP1320M

5-1/4" / 5"×7" MULTIFIT SPEAKER SYSTEM

Features
- 220 Watts Maximum Music Power
- MultiFit Speaker System Design
- 5-1/4" Glass-Fiber Cone Woofer with Rubber Surround
- 3/4" Pure Silk Dome Tweeter with Neodymium Magnet
- 2-Way Mounting Tweeter (Flush Mounting/Surface Mounting)
- High Grade -12dB/oct 2way Crossover Network with Level Attenuator (0,-3dB)
- Extremely High Frequency Reproduction/50kHz
- Aluminum Die-Cast Frame for Higher Power Handling and Reduced Distortion
- S.E.T. (Spider Exhaust Technology) Cooling
- Grille & Mesh Included
- Powerful Strontium Magnet for Dynamic Bass Response
- 5"x7" FORD/CHRYSLER/TOYOTA Adaptor Included

Specifications
Sensitivity 89dB
Continuous Power . . . . . .60 W
Maximum Power. . . . . .220 W
Mounting Depth . . . . . .2-1/8"
Cut-Out Size Width 114mm

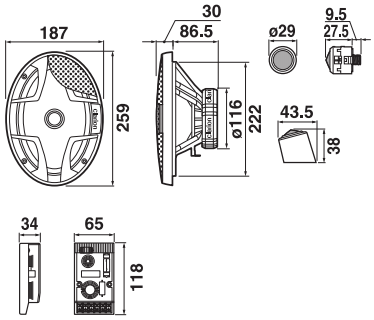


SRP6920M

6"×9" MULTIFIT SPEAKER SYSTEM

Features
- 450 Watts Maximum Music Power
- MultiFit Speaker System Design
- 6"x9" Glass-Fiber Cone Woofer with Rubber Surround
- 1" Pure Silk Dome Tweeter with Neodymium Magnet
- 2-Way Mounting Tweeter (Flush Mounting/Surface Mounting)
- High Grade -12dB/oct 2way Crossover Network with Level Attenuator (0,-3dB)
- Extremely High Frequency Reproduction/50kHz
- Aluminum Die-Cast Frame for Higher Power Handling and Reduced Distortion
- S.E.T.(Spider Exhaust Technology) Cooling
- Grille & Mesh Included
- Powerful Strontium Magnet for Dynamic Bass Response

Specifications
Sensitivity 92db
Continuous Power. . . . . .90 W
Maximum Power . . . . . .450 W
Mounting Depth. . . . . .3-7/16""
Cut-Out Size Width 222mm



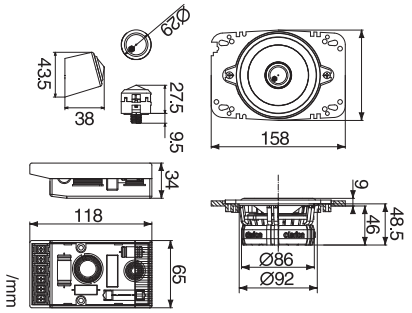
Speakers – Features/Specifications

SRP4620M

4" / 4"×6" MULTIFIT SPEAKER SYSTEM

Features
- 150 Watts Maximum Music Power
- MultiFit Speaker System Design
- 4 Glass-Fiber Cone Woofer with Rubber Surround
- 3/4 Pure Silk Dome Tweeter with Neodymium Magnet
- 2-Way Mounting Tweeter (Flush Mounting/Surface Mounting)
- High Grade -12dB/oct 2way Crossover Network with Level Attenuator (0,-3dB)
- Extremely High Frequency Reproduction/50kHz
- Aluminum Die-Cast Frame for Higher Power Handling and Reduced Distortion
- S.E.T.(Spider Exhaust Technology) Cooling
- Grille & Mesh Included
- Powerful Strontium Magnet for Dynamic Bass Response
- 4 x6 OEM Replacement Adaptor Included
- Grille & Mesh NOT Included

Specifications
Sensitivity 88db
Continuous Power. . . . . .60 W
Maximum Power . . . . . .150 W
Mounting Depth. . . . . 1-13/16""
Cut-Out Size Width 92mm

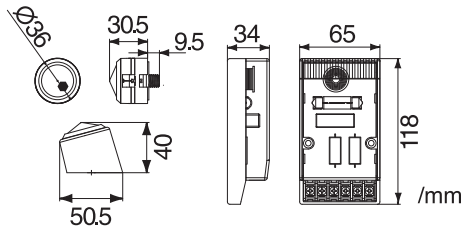


SRP310H

1" DOME TWEETER

Features
- 250 Watts Maximum Music Power
- 1" Pure Silk Dome Tweeter with Neodymium Magnet
- 2-Way Mounting Tweeter (Flush Mounting/Surface Mounting)
- High Grade -12dB/oct Crossover Network with Level Attenuator (0,-3dB,-6dB)
- Extremely High Frequency Reproduction/50kHz
- Powerful Neodymium Magnet

Specifications
Sensitivity 90dB
Continuous Power. . . . . .70 W
Maximum Power . . . . . .250 W
Frequency Response . . . . . 2,000 Hz to 50 kHz



Speakers – Features/Specifications

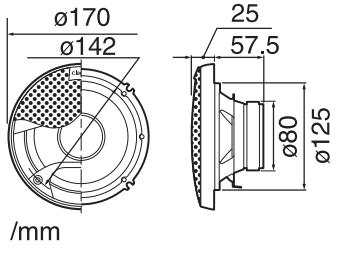
SRQ1620S

6-1/2" 2-WAY COMPONENT SPEAKER

Features
- 250 Watts Maximum Music Power
- 6-1/2" TM-MIPP Cone Woofer
- 3/4" Pure Silk Dome Tweeter with Neodymium Magnet
- 2-Way Mounting Tweeter (Variable Angle Flush Mounting/Surface Mounting)
- Grille & Mesh Included
- Powerful Strontium Magnet for Dynamic Bass Response
- In-Line -6dB/oct Crossover Network
- GM Fit Basket Design/CHRYSLER Adaptor Included

Specifications

Sensitivity	91db
Continuous Power	50 W
Maximum Power	250 W
Mounting Depth	2-5/16"
Cut-Out Size	125mm



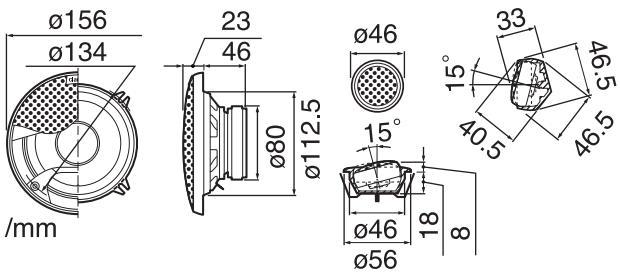
SRQ1320S

5-1/4" 2-WAY COMPONENT SPEAKER

Features
- 200 Watts Maximum Music Power
- 5-1/4" TM-MIPP Cone Woofer
- 3/4" Pure Silk Dome Tweeter with Neodymium Magnet
- 2-Way Mounting Tweeter (Variable Angle Flush Mounting/Surface Mounting)
- Custom-Fit Tweeter Bracket Included
- Powerful Strontium Magnet for Dynamic Bass Response
- Grille & Mesh Included
- In-Line -6dB/oct Crossover Network

Specifications

Sensitivity	91db
Continuos Power	45 W
Maximum Power	200 W
Mounting Depth	1-13/16"
Cut-Out Size	112.5mm



Speakers – Features/Specifications

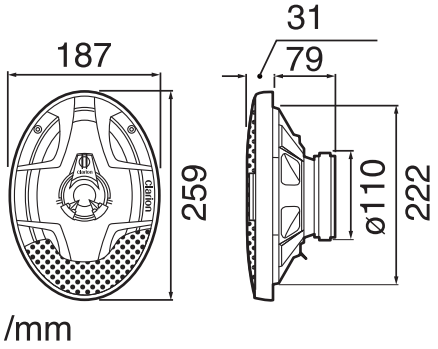
SRQ6930R

6"X9" MULTIAXIAL 3-WAY SPEAKER

Features
- 400 Watts Maximum Music Power
- 6"x 9" TM-MIPP Cone Woofer
- 1" Pure Silk Dome Mid-Range & 5/16" Dome Tweeter
- Powerful Strontium Magnet for Dynamic Bass Response
- Grille & Mesh Included

Specifications

Sensitivity	93db
Continuos Power	80 W
Maximum Power	400 W
Mounting Depth	3-1/8"
Cut-Out Size	222mm



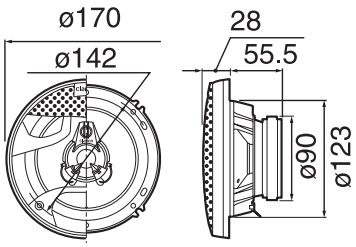
SRQ1630R

6-1/2" MULTIAXIAL 3-WAY SPEAKER

Features
- 280 Watts Maximum Music Power
- 6-1/2" TM-MIPP Cone Woofer
- 3/4" Pure Silk Dome Mid-Range & 5/16" Dome Tweeter
- Powerful Strontium Magnet for Dynamic Bass Response
- Grille & Mesh Included
- GM Fit Basket Design/CHRYSLER Adaptor Included

Specifications

Sensitivity	91db
Continuous Power	55 W
Maximum Power	280 W
Mounting Depth	2-3/16"
Cut-Out Size Width	123mm



Speakers – Features/Specifications

SRQ6830C

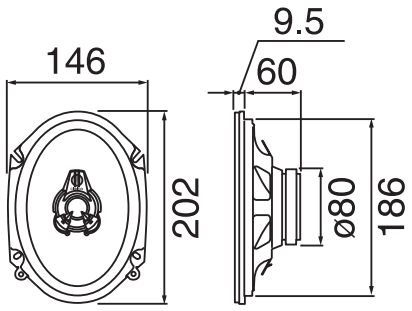
6"X8" CUSTOM FIT MULTIAXIAL 3-WAY SPEAKER

Features

- 300 Watts Maximum Music Power
- 6" x 8" TM-MIPP Cone Woofer
- 3/4" Pure Silk Dome Mid-Range & 5/16" Dome Tweeter
- Powerful Strontium Magnet for Dynamic Bass Response
- Designed for Direct OEM Replacement

Specifications

Sensitivity 92db
Continuous Power. . . . . .60 W
Maximum Power . . . . . .300 W
Mounting Depth. . . . . .2-3/8"
Cut-Out Size Width 186mm



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SRQ5730C

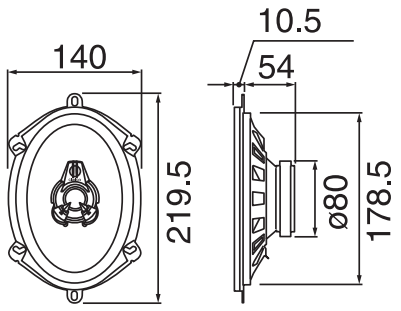
5"X7" CUSTOM FIT MULTIAXIAL 3-WAY SPEAKER

Features

- 250 Watts Maximum Music Power
- 5" x 7" TM-MIPP Cone Woofer
- 3/4" Pure Silk Dome Mid-Range & 5/16" Dome Tweeter
- Powerful Strontium Magnet for Dynamic Bass Response
- Designed for Direct OEM Replacement

Specifications

Sensitivity 92db
Continuous Power. . . . . .55 W
Maximum Power . . . . . .250 W
Mounting Depth. . . . . .2-1/8"
Cut-Out Size Width 178.5mm



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Speakers – Features/Specifications

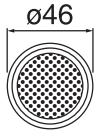
SRQ210H

3/4" DOME TWEETER

Features
- 200 Watts Maximum Music Power
- 3/4" Pure Silk Dome Tweeter with Neodymium Magnet
- 2-Way Mounting Tweeter (Variable Angle Flush Mounting/Surface Mounting)
- Powerful Neodymium Magnet
- In-Line -6dB/oct Crossover Network

Specifications

Sensitivity 90db
Continuous Power. . . . . .45 W
Maximum Power . . . . . .200 W
Frequency Response . . . . . 2,500 Hz to 35 kHz



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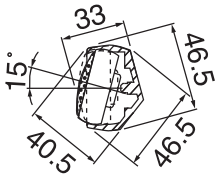
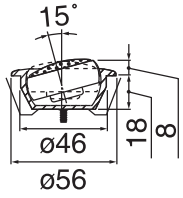
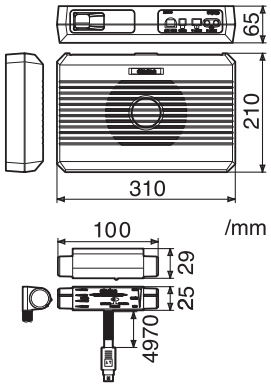






SRV314

AMPLIFIED SUBWOOFER

Features
- Dual-Voice coil
- 120 W high power amplifier with low pass filter
- Maxx Bass circuit for virtual bass enhancer
- 6-3/4" counter drive woofer with dual-neodymium magnet
- Air compression structure with aluminum die-cast enclosure
- Remote control for gain control /low-pass filter (selectable 50/75/100/120 Hz)/phase select
- Blue LED power indicator
- RCA line level input/Speaker level input

*"Maxx Bass" is a patent of KS-Waves."Maxx Bass" is a registered trademark of KS-Waves.

Specifications
- Speaker type: 6-3/4" counter drive powered subwoofer
- Unit used: 6-3/4" MIPP cone woofer (Dual Voice coil)
- Rated output: 60W (30W+30W)
- Max power output:120W (60W+60W)
- Playback frequency range: 30 to 200Hz
- Cut-off frequency: 50Hz/75Hz/100Hz/120Hz
- Input sensitivity: RCA input 20mV to 2V, Speaker input 0.2V to 20V
- Power source voltage: DC14.4V
- Ground: Negative
- Current consumption: 7.0A
- External dimensions:

Main unit:
12-1/4" (W) x 2-5/8" (H) x 8-1/4" (D)
Remote control Unit:
3-15/16" (W) x 1-1/8" (H) x 1" (D)
- Weight: [Body] 2.0Kg [Remote control] 220g

Speakers – Features/Specifications

SRG6920R

6" X 9" COAXIAL 2-WAY SPEAKER

Features
- 350 Watts Maximum Music Power
- 6" x 9" MIPP Cone Woofer
- 2-5/8" Metallized PEI Cone Tweeter
- Powerful Strontium Magnet for Dynamic Bass Response

Specifications

Sensitivity	92dB
Continuous Power	70 W
Maximum Power	350 W
Mounting Depth	2-15/16"
Cut-Out Size Width	222mm

SRG1620R

6-1/2" COAXIAL 2-WAY SPEAKER

Features
- 180 Watts Maximum Music Power
- 6-1/2" MIPP Cone Woofer
- 1" Metallized PEI Balanced-Drive Tweeter
- Powerful Strontium Magnet for Dynamic Bass Response
- GM Fit Basket Design/CHRYSLER Adaptor Included

Specifications

Sensitivity	91dB
Continuous Power	35 W
Maximum Power	180 W
Mounting Depth	1-7/8"
Cut-Out Size Width	123mm

SRG1320R

5-1/4" COAXIAL 2-WAY SPEAKER

Features
- 150 Watts Maximum Music Power
- 5-1/4" MIPP Cone Woofer
- 1" Metallized PEI Balanced-Drive Tweeter
- Powerful Strontium Magnet for Dynamic Bass Response

Specifications

Sensitivity	91dB
Continuous Power	35 W
Maximum Power	150W
Mounting Depth	1-13/16"
Cut-Out Size Width	113.5mm

SRG1020R

4" COAXIAL 2-WAY SPEAKER

Features
- 140 Watts Maximum Music Power
- 4" MIPP Cone Woofer
- 1" Metallized PEI Balanced-Drive Tweeter
- Powerful Strontium Magnet for Dynamic Bass Response

Specifications

Sensitivity	90dB
Continuous Power	30 W
Maximum Power	140 W
Mounting Depth	1-11/16"
Cut-Out Size Width	102mm

Speakers – Features/Specifications

SRG5720C

5" X 7" CUSTOM FIT COAXIAL 2-WAY SPEAKER

Features
- 200 Watts Maximum Music Power
- 5" x 7" MIPP Cone Woofer
- 1" Metallized PEI Balanced-Drive Tweeter
- Powerful Strontium Magnet for Dynamic Bass Response
- Designed for Direct OEM Replacement

Specifications

Sensitivity	91dB
Continuous Power	45 W
Maximum Power	200 W
Mounting Depth	2-1/6"
Cut-Out Size Width	178.5mm

SRG920C

3-1/2" CUSTOM FIT COAXIAL 2-WAY SPEAKER

Features
- 60 Watts Maximum Music Power
- 3-1/2" MIPP Cone Woofer
- 1" Metallized PEI Balanced-Drive Tweeter
- Powerful Strontium Magnet for Dynamic Bass Response
- Designed for Direct OEM Replacement

Specifications

Sensitivity	89dB
Continuous Power	20 W
Maximum Power	60 W
Mounting Depth	1-5/16"
Cut-Out Size Width	78mm

SRG4620C

4" X 6" CUSTOM FIT COZXIAL 2-WAY SPEAKER

Features
- 140 Watts Maximum Music Power
- 4" x 6" MIPP Cone Woofer
- 1" Metallized PEI Balanced-Drive Tweeter
- Powerful Strontium Magnet for Dynamic Bass Response
- Designed for Direct OEM Replacement

Specifications

Sensitivity	91dB
Continuous Power	30 W
Maximum Power	140 W
Mounting Depth	1-13/16"
Cut-Out Size Width	138.5mm

Marine Audio

Land or Sea – Clarion Will Take You There

Digital Media Compatible
The CMD5, M475 and M275 are compatible with MP3 and WMA files. Burn your favorite music onto a CD-R or CD-R/W and enjoy hours of entertainment without changing discs.

Bluetooth Ready
The CMD5, M475 and M275 are Bluetooth ready. Simply connect the BLT370 and enjoy high quality streaming audio from your portable music player or MP3-equipped cellular phone. You can even answer the phone.

Quick Release Door with Watertight Seal
The design of this door with its unique rubber gasket and door assembly, gives you maximum protection of the CMD5's internal components. This design gives the user one-touch easy loading of CDs. You can rest assured of long lasting moisture protection with at least 10,000 duty cycles for durability.

CMD5's Water-Resistant Face Plate Meets IPX5 Watertight Standard
The water-resistant face plate on the CMD5 can withstand a 65 gallon stream of water from a 1-inch diameter hose at 10 feet for 5 minutes. This standard eliminates concerns of water damage caused by rain, splashes, and wash downs.

Stainless Steel Chassis
The CMD5 and M475 feature a stainless steel chassis to help prevent water from entering the the radio and damaging the circuitry inside. We have also included a drip shield over the wire harness connection to further reduce the risk of water being able to infiltrate the radio.

Silicone Oil Damped Suspension System
Our tried-and-true mobile audio CD mechanisms are fine-tuned for the marine environment to minimize mistracking. This is accomplished without resorting to buffer circuits, which can add distortion and degrade sound quality.

Conformally Coated PC Boards
All Clarion Marine head units have had their circuit boards coated with Humiseal. This is a product developed to protect electronic components being used in harsh environments. This coating is one of the many reasons why Clarion Marine head units meet the ASTM B117 Salt/Fog Exposure specification.

Marine Audio – Technologies

Front Panel Auxiliary Inputs
The M475 and M275 feature from panel Auxiliary input connections. Simply connect your portable music player, DVD player or even a laptop and enjoy high quality, interference free music. Clarion Auxiliary inputs feature three sensitivity ranges to ensure perfect level matching.

Clarion also offers the CCUAUXEX1 Aux input cable to make bringing your music to life even easier. This is a 3-foot cable with 1/8-inch stereo mini-jacks on each end. Perfect for connecting your portable audio player to either the M275 or M475.

Wired Remote Controls
The CMD5 and M475 are ready for Clarion's wired remote control system. Choose our 3-inch LCD equipped remotes (CMRC1-SB or CMRC1-BSS) for full command over all functions and a display to let you know whats going on. Our 2-inch remotes (CMRC2-SB or CMRC2-BSS) have all the same functionality, but without the display. Both remotes are available in black or stainless steel finishes and up to four remotes can be used with one source unit with optional (M101RYC) Y-Cables.

Infrared Remote Controls
The CMD5 and M475 are IR remote control ready. Enjoy full control over your audio system system control from almost anywhere on the boat.

Advanced iPod Interface Ready
Combine the CMD5 or M475 with the CCAIPOD for advanced control over your Apple iPod. Sort your music by Album, Artists, Song Title, Composer, Genre or Playlist to make listening to what you want easier than ever. You can see the title of what you are listening to on the display of your radio.

Marine Power Amplifiers
Power amplifiers are essential in marine applications where high ambient noise competes with the sound system. The fact is that without an amplifier, increasing the volume control often means increasing distortion.

Just like increasing the size of the engine adds to the performance of a boat, increasing power of the audio system adds to its performance. People who know audio understand that amplifiers add more than just volume to music. They reduce distortion at high volumes and ensure that the music that you hear is crisp, clear and powerful.

Clarion marine audio amplifiers include sound quality features such as electronic crossovers and differential inputs. Our amplifiers are also bridgeable, so you can make even more power when driving a subwoofer or two.

Advanced Marine Design

Nobody understands the marine audio environment like Clarion - we invented the category and remain the industry leader. Clarion marine product are designed to not only look and sound great, but to withstand the harshest tests Mother Nature can through their way.

ASTM B117 Salt Fog Exposure Standard
This test was created to evaluate a products corrosion resistance over extended exposure to salt water. The test involves subjecting a device (speaker for example) to a spray in a closed chamber of a solution of NaCl ranging in concentration from 3.5 to 20%. The second part of the test involves bubbling compressed air through a humidifying tower containing hot de-ionized water. This recreates a condition of 100% humidity. Clarion products subjected to these tests must pass without corrosion, damage or failure.

ASTM D4329 - UV Exposure Testing

This testing standard describes an evaluation of the damaging effects of long term outdoor UV exposure. The test subjects must withstand alternating cycles of 8 hours of ultraviolet light exposure at 70 degrees Celsius, followed by 4 hours of condensation at 50 degrees Celsuis, then repeated for extended periods of time in multiples of 500 hours per test (up to 2000 Hours). The devices under test must pass without discoloring, fading, chalking or cracking.

Centrex 814 Chassis and Grills

All Clarion marine speaker chassis' and grills are injection moulded from a polymer plastic called Centrex 814. This plastic has physical properties similar to ABS plastic, but adds the ability to resist chalking, fading and yellowing due to prolonged UV exposure.

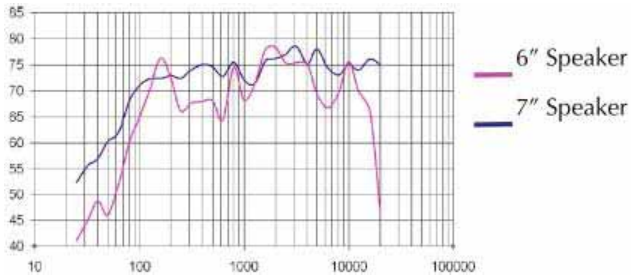
Triple Gasket Design

All Clarion marine speakers include a synthetic rubber mounting gasket to ensure water does not infiltrate behind the speaker. This not only protects the speaker itself from damage, but the hull of the boat. All marine speakers feature Santoprene rubber surround at the outer edge of the woofers for durability and flexibility in all weather conditions. Coaxial marine speakers feature a custom tooled Santoprene rubber gasket at the base of the woofer cone that seals the cone to the tweeter mounting post. These three gaskets ensure there is no way water can penetrate the speaker, causing it to fail or your boat to be damaged.

7-inch speakers

Clarion's line of 7-inch diameter speakers set new standards for marine audio entertainment. These speakers were designed to the same strict tolerances as our 6.5-inch speakers, but offer improved efficiency, as well as improved bass output thanks to a 35% increase in cone area.

The results of our efforts is a speaker that is 3dB more efficient with dramatically improved low frequency extension and smooth band to band performance.



Sport Series Speakers

The Sport Series of speakers were introduced to add options to your purchase. If you are looking for aggressive styling with the same proven marine performance you've come to expect from Clarion, then the Sport Series CMCX7.1s 7-inch coaxial speaker set and CMSW10.1s 10" subwoofer are the perfect choice.

Wakeboard Tower Speaker Systems

New for 2008, Clarion introduces a full line of wakeboard tower speaker enclosures. These enclosures are constructed from high quality, hand-laid fiberglass and feature and automotive quality clear finish. Each pair of enclosures includes stainless steel mounting hardware that will accomodate tower bar diameters from 1-7/8" through 2.5".

The enclosures were designed specifically for use with Clarion's 7-inch coaxial speakers for excellent efficiency and sound quality.

You can purchase the enclosures in your choice of silver, black or white with either the CMCX7.1 or CMCX7.1S coaxial speaker set.

Dare to compare: The Clarion CMR1720T enclosures offer more than twice the efficiency of other 6.5" wakeboard tower speaker enclosures. This means that your music will be louder, your hear and feel more bass, your boat battery will last longer and you get more bang for your buck.

Marine Audio – CMD5

CMD5

MARINE AM/FM CD/MP3/WMA PLAYER WITH CENET CONTROL AND WATERTIGHT FACEPLATE

- ASTM B117 Salt/Fog Exposure Certified
- ASTM D4329 UV Exposure Certified
- IPX 5 Water Intrusion Rated
- Exclusive flip-down Marinized Front Panel
- MP3/WMA Compressed audio file playback
- CD-R / CD-RW compatible
- Bluetooth Ready for Streaming Audio and Hands-Free phone operation (Optional BLT370 required)
- White Positive 2-Line LCD display
- CeNET Control of Optional TV Tuner, 6-Disc CD Changer, Advanced iPod Interface and Satellite Radio Receiver
- Humiseal Conformally Coated circuit board
- Input for Marine Wired Remote Control (remote not included)
- IR Remote Control (included)
- Bass/Treble controls
- Subwoofer Level Control
- 6-Channel RCA Line Level Output
- 2-Channel RCA Line Level Aux Input
- 212-Watt Amplifier (53 W x 4)
- DSP Radio Tuner with 18 FM/6 AM Presets
- Magna Bass EX
- Screen Saver
- Stainless Steel Chassis
- Drip Shield over wire harness connections
- Advanced iPod Interface Ready (requires CCA-IPOD)

Specifications

FM Useable Sensitivity	9 dB
FM 50 dB Quieting Sensitivity	15 dB
FM Alternate Channel Selectivity	70 dB
FM Stereo Separation	35 dB
FM Stereo Frequency Response	30 Hz to 15 kHz
AM Useable Sensitivity	25 uV
CD Signal-to-Noise Ratio	100 dB
CD Frequency Response	10 Hz to 20 kHz
CD Dynamic Range	95 dB
Maximum Power Output	53 W x 4
Continuous Power Output	21 W x 4
Harmonic Distortion	0.02%
Line-Level Output Voltage	2.0 V
Dimensions, Escutcheon (h x w x d)	3-5/8 x 7-7/8 x 1-7/8
Dimensions, Chassis (h x w x d)	2 x 7-1/8 x 7-7/10

M475

MARINE MP3/WMA RECEIVER WITH CENET

- MP3/WMA Compressed audio file playback
- CD-R / CD-RW compatible
- Bluetooth Ready for Streaming Audio and Hands-Free phone operation (Optional BLT370 required)
- White Positive LCD display
- CeNET Control of Optional TV Tuner, 6-Disc CD Changer, Ipod Interface and Satellite Radio Receiver
- Humiseal Conformally Coated circuit board
- Input for Marine Wired Remote Control (remote not included)
- IR Remote Control (included)
- Subwoofer Level Control
- Z-Enhancer and Magna Bass EX
- 6-Channel RCA Line Level Output
- Front Panel Aux Input
- 200-Watt Amplifier (50 W x 4)
- DSP Radio Tuner with 18 FM/6 AM Presets
- Magna Bass EX
- Screen Saver
- Detachable Control Panel
- Stainless Steel Chassis
- Drip Shield over wire harness connections
- Advanced iPod Interface Ready (requires CCA-IPOD)

Specifications (preliminary)

FM Useable Sensitivity	9 dB
FM 50 dB Quieting Sensitivity	15 dB
FM Alternate Channel Selectivity	70 dB
FM Stereo Separation	35 dB
FM Stereo Frequency Response	30 Hz to 15 kHz
CD Signal-to-Noise Ratio	100 dB
CD Frequency Response	10 Hz to 20 kHz
CD Dynamic Range	95 dB
Maximum Power Output	50 W x 4
Continuous Power Output	19 W x 4
Line-Level Output Voltage	2.0 V
Dimensions, Chassis (h x w x d)	2" x 7" x 6"

M275

MARINE MP3/WMA RECEIVER

- MP3/WMA Compressed audio file playback
- CD-R / CD-RW compatible
- Bluetooth Ready for Streaming Audio and Hands-Free phone operation (Optional BLT370 required)
- White Positive LCD display
- Pelgan Z Conformally Coated circuit board
- Z-Enhancer and Magna Bass EX
- 2-Channel RCA Line Level Output
- Front Panel Aux Input
- 200-Watt Amplifier (50 W x 4)
- DSP Radio Tuner with 18 FM/6 AM Presets
- Magna Bass EX
- Detachable Control Panel

Specifications (preliminary)

FM Useable Sensitivity	9 dB
FM 50 dB Quieting Sensitivity	15 dB
FM Alternate Channel Selectivity	70 dB
FM Stereo Separation	35 dB
FM Stereo Frequency Response	30 Hz to 15 kHz
CD Signal-to-Noise Ratio	100 dB
CD Frequency Response	10 Hz to 20 kHz
CD Dynamic Range	95 dB
Maximum Power Output	50 W x 4
Continuous Power Output	19 W x 4
Line-Level Output Voltage	2.0 V
Dimensions, Chassis (h x w x d)	2" x 7" x 6"

Marine Wired Remote Controls

CMRC1-SB

WATERPROOF WIRED LCD REMOTE CONTROL

CMRC2-SB

WATERPROOF WIRED REMOTE CONTROL

CMRC1-BSS

WATERPROOF WIRED LCD REMOTE CONTROL

Same as above with Stainless Steel trim ring.

Features

- LCD Readout
- Uses Standard-Gauge 3" Hole-Cutout Size
- Round Mounting Hole for Easy Installation
- Water-Resistant Design
- Rubber-Gasket Rear Seal
- UV-Resistant Front Panel and Rubber Buttons
- Controls all Major Radio, CD, CD Changer, iPod and Satellite Radio Functions

CMRC2-BSS

WATERPROOF WIRED REMOTE CONTROL

Same as above with Stainless Steel trim ring

Features

- Uses Standard-Gauge 2-1/16"Hole-Cutout Size
- Round Mounting Hole for Easy Installation
- Water-Resistant Design
- Rubber-Gasket Rear Seal
- UV-Resistant Front Panel and Rubber Buttons
- Controls all Major Radio, iPod and CD Functions
- 2-1/16" round mounting hole

M101RXC

- 23' Extention Cable for Both Wired Remote Controls

M101RYC

- “Y” Cable to Connect Two Wired Remote Controls to a single Wired Remote Ready marine source unit

REMOTE KITS

K-CMRC1-SB includes CMRC1-SB remote and M101RXC 23-foot extension cable

K-CMRC1-BSS includes CMRC1-BSS remote and M101RXC 23-foot extension cable

K-CMRC2-SB includes CMRC2-SB remote and M101RXC 23-foot extension cable

K-CMRC2-BSS includes CMRC2-BSS remote and M101RXC 23-foot extension cable

APX290M

2/1-CHANNEL POWER AMPLIFIER

- 90 Watts x 2 @ 4 Ohm
- 150 Watts x 2 @ 2 Ohm
- 360 Watts x 1 @ 2 Ohm
- Class AB Output Stage
- High or Low Pass Electronic Crossover (50Hz to 5.5kHz) at 12dB/Octave
- Conformal Coated Double Sided FR4PC Board
- Corrosion Resistant Aluminum Heat Sink
- Variable Bass Boost Control
- Soft Turn-On and Turn-Off Circuitry
- Ground Loop Isolation Circuit
- Gold Plated RCA, Power, and Speaker Connections
- Speaker Level Inputs

Specifications

Number of Channels	2
Frequency Response (±.3dB)	20 Hz to 20kHz
Signal-to-Noise Ratio (CEA-2006)	> 95 dB
THD@ Rated Output	0.10 %
Input Sensitivity	0.2 to 6 V
High Level Input Sensitivity	0.5v to 13V
Power Output @ 4 Ohm Stereo (CEA-2006)	90W x 2
Power Output @ 2 Ohms Stereo (CEA-2006)	150W x 4
Power Output @ 4 Ohm Mono (CEA-2006)	250W x 2
Dimensions (l x w x h)	10-1/2" x 9-1/8" x 2-1/4"

APX490M

4/3/2-CHANNEL POWER AMPLIFIER

- 90 Watts x 4 @ 4 Ohm
- 165 Watts x 4 @ 2 Ohm
- 360 Watts x 2 @ 2 Ohm
- Class AB Output Stage
- Independant High or Low Pass Electronic Crossovers (50Hz to 5.5kHz) at 12dB/Octave
- Conformal Coated Double Sided FR4PC Board
- Corrosion Resistant Aluminum Heat Sink
- Variable Bass Boost Control
- Soft Turn-On and Turn-Off Circuitry
- Ground Loop Isolation Circuit
- Gold Plated RCA, Power, and Speaker Connections
- Speaker Level Inputs

Specifications

Number of Channels	2
Frequency Response (±.3dB)	20 Hz to 20kHz
Signal-to-Noise Ratio (CEA-2006)	> 97 dB
THD@ Rated Output	0.10 %
Input Sensitivity	0.2 to 6 V
High Level Input Sensitivity	0.5v to 13V
Power Output @ 4 Ohm Stereo (CEA-2006)	90W x 2
Power Output @ 2 Ohms Stereo (CEA-2006)	165W x 4
Power Output @ 4 Ohm Mono (CEA-2006)	330W x 2
Dimensions (l x w x h)	16-1/8" x 9-1/8" x 2-1/4"

Marine Audio – Speakers Information

CM1605

6-1/2" MARINE DUAL CONE SPEAKER SET

- Maximum Power Handling: 100 Watts
- Continuous Power Handling: 25 Watts
- Cone Material: Polypropylene Woofer Cone
- Santoprene Rubber Surround
- Rubber Mounting Gasket
- Meets or Exceeds ASTM B117 (Salt/Fog Exposure)
- Meets or Exceeds ASTM D4329 (UV Exposure)
- Frequency Response: 60Hz – 18kHz
- Efficiency: 87dB @ 1 meter, 1 watt
- Cut Out Size: 5”
- Mounting Depth: 2 3/8”

CM1625

6-1/2" MARINE COAXIAL SPEAKER SET

- Maximum Power Handling: 100 Watts
- Continuous Power Handling: 25 Watts
- Polypropylene Woofer Cone
- Santoprene Rubber Surround
- Triple Gasket Design
- 3/4” Titanium-Coated Dome Tweeter
- Meets or Exceeds ASTM B117 (Salt/Fog Exposure)
- Meets or Exceeds ASTM D4329 (UV Exposure)
- Frequency Response: 60Hz – 20kHz
- Efficiency: 87dB @ 1 meter, 1 watt
- Cut Out Size: 5”
- Mounting Depth: 2 3/8”

CM1635

6-1/2" MARINE COMPONENT SPEAKER SET

- Maximum Power Handling: 130 Watts
- Continuous Power Handling: 35 Watts
- Polypropylene Woofer Cone
- Santoprene Rubber Surround
- 1” Titanium-Coated Dome Tweeter
- Meets or Exceeds ASTM B117 (Salt/Fog Exposure)
- Meets or Exceeds ASTM D4329 (UV Exposure)
- Frequency Response: 60Hz – 20kHz
- Efficiency: 87dB @ 1 meter, 1 watt
- Cut Out Size (Woofer): 5”
- Cut Out Size (Tweeter): 2”
- Mounting Depth (Woofer): 5”
- Mounting Depth (Tweeter): 7/8”
- Tweeter Mounting Configurations: Flush or Surface

CMSW10.1

10" MARINE SUBWOOFER

- Maximum Power Handling: 350 Watts
- Continuous Power Handling: 100 Watts
- Polypropylene Cone
- Santoprene Rubber Surround
- Meets or Exceeds ASTM B117 (Salt/Fog Exposure)
- Meets or Exceeds ASTM D4329 (UV Exposure)
- Frequency Response: 60Hz – 2.5kHz
- Efficiency: 88dB @ 1meter, 1watt
- Wire Terminals: Gold-Plated Spade Terminals
- Rubber Mounting Gasket
- Protected Magnet and Rear Cone Design
- Cut Out Size: 9 1/16”
- Mounting Depth: 4 1/4”
- Impedance: 4 Ohm

Marine Audio – Speakers Information

CMCS7.1

7" MARINE COMPONENT SPEAKER SET

- Maximum Power Handling: 160 Watts
- Continuous Power Handling: 50Watts
- Polypropylene Woofer Cone
- Santoprene Rubber Surround
- Rubber Mounting Gasket
- 1.25” Titanium-Coated Dome Tweeter
- Meets or Exceeds ASTM B117 (Salt/Fog Exposure)
- Meets or Exceeds ASTM D4329 (UV Exposure)
- Frequency Response: 60Hz – 20kHz
- Efficiency: 93dB
- Cut Out Size (Woofer): 6 1/4”
- Mounting Depth (Woofer): 5”
- Tweeter Mounting Configurations: Flush or Surface

CMCX7.1

7" MARINE COAXIAL SPEAKER SET

- Maximum Power Handling: 160 Watts
- Continuous Power Handling: 50 Watts
- Polypropylene Woofer Cone
- Santoprene Rubber Surround
- Triple Gasket Design
- 1.25” Titanium-Coated Dome Tweeter
- Meets or Exceeds ASTM B117 (Salt/Fog Exposure)
- Meets or Exceeds ASTM D4329 (UV Exposure)
- Frequency Response: 50Hz – 22kHz
- Efficiency: 93dB @ 1 meter, 1 watt
- Cut Out Size: 6 1/4”
- Mounting Depth: 2 3/8”

CMDC7.1

7" MARINE DUAL CONE SPEAKER SET

- Maximum Power Handling: 120 Watts
- Continuous Power Handling: 40 Watts
- Polypropylene Woofer Cone
- Santoprene Rubber Surround
- Rubber Mounting Gasket
- Meets or Exceeds ASTM B117 (Salt/Fog Exposure)
- Meets or Exceeds ASTM D4329 (UV Exposure)
- Frequency Response: 50Hz – 18kHz
- Efficiency: 93dB @ 1 meter, 1 watt
- Cut Out Size: 6 1/4”
- Mounting Depth: 2 3/8”

Marine Audio - Sport Series Information

CMCS7.1s

7" SPORT SERIES MARINE SPEAKER SET

- Meets or exceeds ASTM B117 (Salt/Fog Exposure)
- Meets or exceeds ASTM D4329 (UV Exposure)
- 7" Polypropylene Woofer
- 1.25" Titanium-Dome Tweeter
- Santoprene Rubber Surround
- Triple Gasket Design
- UV-Resistant High-Impact Centrex 814 Plastic Grill and frame
- Gold-Plated Speaker Terminals
- Rubber-Insulated Tinsel Leads
- Stainless Steel Mounting Hardware
- 160W Power Handling

CMSW10.1s

10" SPORT SERIES MARINE SUBWOOFER

- Maximum Power Handling: 350 Watts
- Continuous Power Handling: 100 Watts
- Polypropylene Woofer Cone
- Santoprene Rubber Surround
- Rubber Mounting Gasket
- Meets or Exceeds ASTM B117 (Salt/Fog Exposure)
- Meets or Exceeds ASTM D4329 (UV Exposure)
- Frequency Response: 60Hz – 2.5kHz
- Efficiency: 88dB @ 1meter, 1watt
- Wire Terminals: Gold-Plated Spade Terminals
- Cut Out Size: 9 1/16”
- Mounting Depth: 4 1/4”
- Impedance: 4-Ohm

Wakeboard Tower Speaker System

MARINE WAKEBOARD TOWER SPEAKER SYSTEMS

- Meets or exceeds ASTM B117 (Salt/Fog Exposure)
- Meets or exceeds ASTM D4329 (UV Exposure)
- Hand Laid Fiberglass enclosure construction
- 7" Polypropylene Woofer
- 1.25" Titanium-Dome Tweeter
- Santoprene Rubber Surround
- Rubber Mounting Gasket
- UV-Resistant High-Impact Centrex 814 Plastic Grill and frame
- Spring Loaded Speaker Terminals
- Stainless Steel Mounting Hardware (1-7/8" - 2-1/2")
- 160W Power Handling

Available Colour/Speaker Combinations

Model	Enclosure Colour	Speakers
K-CMR1720TS	Silver	CMCX7.1
K-CMR1720TW	White	CMCX7.1
K-CMR1720TB	Black	CMCX7,1
K-CMR1720TS-S	Silver	CMCX7.1S
K-CMR1720TW-S	White	CMCX7.1S
K-CMR1720TB-S	Black	CMCX7,1S

Marine Audio – Accessories

RTR600B/RTR600W

MANUAL OPERATION MARINE COVER

- One-Piece design with removable screw covers
- Rubber gasket behind main housing
- Manual opening function
- Easy push-button release
- Protects DIN-sized radio from water splash damage

SEAGIM

MARINE ENCLOSURE WITH HYDRAULIC COVER

- Protects 1-DIN radio from damage due to splashes
- Two-piece front panel design - Main housing and trim ring
- Rubber gasket behind main housing
- Two wire/vent openings in removable rear panel
- Damped opening function
- Reversible mounting hardware - surface or suspended mounting.

BNC5200B/BNC5200W

HYDRAULIC MARINE COVER

- Two-piece front panel design - Main housing and trim ring
- Rubber gasket behind main housing
- Damped opening function
- Easy push-button release
- Protects DIN-sized radio from water splash damage

Marine Audio – Subwoofer Specifications

CMSW10.1 T-S Parameters

Fs (Hz)	49.7
Qms	9.243
VAS (Litres)	21.57
VAS (Cubic Feet)	0.761
MMs (Grams)	63.46
Xmax (mm)	10
Xmax (inches)	0.394
Sd (m2)	0.0306
Qes	1.003
Re	3.857
Le	1.977
Z	4.629
Bl	8.729
Qts	0.905
dB SPL (1W/1M)	86.2
Power (RMS)	350
Vd (Cubic Feet)	0.045
Outside Diameter	10-9/16"
Mounting Hole	8.875
Mounting Depth	4.5"
Total Weight	9.8 lbs
Grill Color	White

Enclosure Designs

Sealed Enclosure
Net Internal Air Volume: 0.9 ft3
F3 Frequency: 52.5 Hz
Total System Q: 1.1

Vented Enclosure
Net Internal Air Volume: 1.5 ft3
Vent Dimension: 3" ID x 5.6" Long
F3 Frequency: 32.19 Hz

CMSW10.1s T-S Parameters

Fs (Hz)	50.09
Qms	8.256
VAS (Litres)	18.6
VAS (Cubic Feet)	0.657
MMs (Grams)	72.51
Xmax (mm)	12
Xmax (inches)	0.472
Sd (m2)	0.03067
Qes	1.084
Re	4.152
Le	2.064
Z	4.983
Bl	9.351
Qts	0.958
dB SPL (1W/1M)	85.33
Power (RMS / MAX)	350
Vd (Cubic Feet)	0.045
Outside Diameter	10-9/16"
Mounting Hole	8.875
Mounting Depth	4.5"
Total Weight	9.8 lbs
Grill Color	Silver/Grey

Enclosure Designs

Sealed Enclosure
Net Internal Air Volume: 0.6 ft3
F3 Frequency: 56.24 Hz
Total System Q: 1.0

Vented Enclosure
Net Internal Air Volume: 1.4 ft3
Vent Dimension: 3" ID x 5.875" long
F3 Frequency: 31.48 Hz

Marine Remote Compatibility Chart

DECK	BUS	Infra Red	M101RCB	M101RCC	M101RCW	M102RCB	M102RCW
XMA1	C-Bus	N/A	Yes	Yes	Yes	Yes	Yes
XMA2	N/A	N/A	N/A	N/A	N/A	N/A	N/A
XMD1	C-Bus	N/A	Yes	Yes	Yes	Yes/No Mute	Yes/No Mute
XMD2	N/A	N/A	Yes	Yes	Yes	Yes/No Mute	Yes/No Mute
XMD3	CeNET	N/A	Yes	Yes	Yes	Yes	Yes
CMD4	CeNET	N/A	Yes	Yes	Yes	Yes	Yes
CMD4A	CeNET	Yes	Yes	Yes	Yes	Yes	Yes
CMD5	CeNET	Yes	Yes	Yes	Yes	Yes	Yes
M475	CeNET	Yes	Yes	Yes	Yes	Yes	Yes
M455A	CeNET	N/A	Yes	Yes	Yes	Yes	Yes
M455	CeNET	N/A	Yes	Yes	Yes	Yes	Yes
M335	N/A	N/A	Yes	Yes	Yes	Yes	Yes
M275	N/A	N/A	N/A	N/A	N/A	N/A	N/A
M255	N/A	N/A	N/A	N/A	N/A	N/A	N/A
M0350	N/A	N/A	N/A	N/A	N/A	N/A	N/A
M1000R	C-Bus	N/A	Inc	Inc	Inc	Inc	Inc
M2455	N/A	N/A	N/A	N/A	N/A	N/A	N/A
M3170	C-Bus	N/A	Yes	Yes	Yes	Yes/No Mute	Yes/No Mute
M3580		N/A	N/A	N/A	N/A	N/A	N/A
M4275	N/A	N/A	N/A	N/A	N/A	N/A	N/A
M5170	C-Bus	N/A					
M5275	C-Bus	N/A					
M5355	C-Bus	N/A					
M5470	C-Bus	N/A	Yes	Yes	Yes	Yes/No Mute	Yes/No Mute
M5475	C-Bus	N/A	Yes	Yes	Yes	Yes	Yes
M5675	C-Bus	N/A	Yes	Yes	Yes	Yes	Yes
M5680		N/A	N/A	N/A	N/A	N/A	N/A
M8430		N/A	N/A	N/A	N/A	N/A	N/A
M9480		N/A	N/A	N/A	N/A	N/A	N/A

Marine Remote Compatibility Chart

DECK	M102RCS	M201RCS	M202RC	M301RC	CMRC1SB	CMRC1BSS	CMRC2SB	CMRC2BSS
XMA1	Yes	Yes	Yes/ No Display	Yes/ No Display	Yes/No Display	Yes/No Display	Yes	Yes
XMA2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
XMD1	Yes/No Mute	Yes	Yes/No Display	Yes/ No Display	Yes/No Display	Yes/No Display	Yes	Yes
XMD2	Yes/No Mute	Yes	Yes/ No Display	Yes/ No Display	Yes/No Display	Yes/No Display	Yes	Yes
XMD3	Yes	Yes/ No Display	Yes/ No Display	Yes	Yes	Yes	Yes	Yes
CMD4	Yes	Yes/No Display	Yes/ No Display	Yes	Yes	Yes	Yes	Yes
CMD4A	Yes	Yes/No Display	Yes/ No Display	Yes	Yes	Yes	Yes	Yes
CMD5	Yes	Yes/No Display	Yes/ No Display	Yes	Yes	Yes	Yes	Yes
M475	Yes	Yes/No Display	Yes/No Display	Yes	Yes	Yes	Yes	Yes
M455A	Yes	Yes/No Display	Yes/No Display	Yes	Yes	Yes	Yes	Yes
M455	Yes	Yes/No Display	Yes/No Display	Yes	Yes	Yes	Yes	Yes
M335	Yes	Yes/ No Display	Yes	Yes/ No Display	Yes/No Display	Yes/No Display	Yes	Yes
M275	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
M255	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
M0350	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
M1000R	Inc	Inc	Inc	Inc	Inc	Inc	Inc	Inc
M2455	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
M3170	Yes/No Mute	Yes/No Display	Yes/No Display	Yes/No Display	Yes/No Display No Mute	Yes/No Display No Mute	Yes/No Mute	Yes/No Mute
M3580	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
M4275	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
M5170								
M5275								
M5355								
M5470	Yes/No Mute	Yes/No Display	Yes/No Display	Yes/No Display	Yes/No Display No Mute	Yes/No Display No Mute	Yes/No Mute	Yes/No Mute
M5475	Yes	Yes/No Display	Yes/No Display	Yes/No Display	Yes/No Display No Mute	Yes/No Display No Mute	Yes/No Mute	Yes/No Mute
M5675	Yes	Yes/No Display	Yes/ No Display	Yes/ No Display	Yes/No Display	Yes/No Display	Yes	Yes
M5680	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
M8430	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
M9480	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

UNGO ProSecurity

K20

KEYLESS ENTRY SYSTEM

Features
- (2) 4-Button Remote Transmitters (SAA474U)
- 2 Auxiliary Outputs
- On-Board Relays for Door Locks and Dome Light Supervision
- Horn Honk Output
- Driver's Door Unlock Priority Compatible
- Comfort Closure
- (+/-) Parking Light Output
- Common Features

RS10

REMOTE ENGINE START WITH KEYLESS ENTRY

Features
- (1) 4-Button Remote Transmitter (SAA474U)
- 1 Auxiliary Output
- (-) Door Lock Outputs
- Short Run / Turbo Timer Mode
- (+/-) Parking Light Output
- Comfort Closure

S100

SECURITY SYSTEM

Features
- (2) 4-Button Remote Transmitters (SAA474U)
- 2 Auxiliary Outputs
- (+/-) Parking Light Output
- ProSecurity Programmer Compatible
- Common Features
- Common Security Features

S670

TWO-WAY SECURITY SYSTEM

Features
- (1) 2-Way LCD Remote Transmitter (SAA477U)
- (1) 4-Button Remote Transmitter (SAA474U)
- 3 Auxiliary Outputs
- On-Board Relays for Door Locks and Dome Light Supervision
- Horn Honk Output
- (+/-) Parking Light Output
- Comfort Closure
- Common Features
- Common Security Features

Ungo – Information

SR6000

TWO-WAY SECURITY SYSTEM WITH REMOTE ENGINE START

Features

- (1) 2-Way LCD Remote Transmitter (SAA477U)
- (1) 4-Button Remote Transmitter (SAA474U)
- 3 Auxiliary Outputs
- Short Run / Turbo Timer Mode
- Compact Satellite Relay Pack
- Driver's Door Unlock Priority Compatible
- (+/-) Parking Light Output
- ProSecurity Programmer Compatible
- Common Features
- Common Remote Start and Security Features

SR9000

1-MILE RANGE TWO-WAY SECURITY SYSTEM WITH REMOTE ENGINE START

Features

- 2-Way LCD Remote Transmitter (SAA7701U)
- SDC (Secure Digital Communication) capable of 1-Mile Range
- 4 Auxiliary Outputs
- Short Run / Turbo Timer Mode
- Compact Satellite Relay Pack
- Driver's Door Unlock Priority Compatible
- Built-In Wait to Start Diesel Timer
- Driver's Door Priority
- Defroster Output
- Comfort Closure
- Dedicated Horn Honk Output
- ProSecurity Programmer Compatible
- Common Features
- Common Remote Start and Security Features

UNGO – Features and Technologies

Common UNGO Features

Anti-Code Grabbing Technology
Individual Remote Recognition
Keyless Entry*
Remote Enabled Valet
Hyper Blue Status LED
Remote Panic
Selectable Ignition Controlled Door Locks
ProSecurity Starter Disable*
ProSecurity Power Up
Progressive Door Unlock*
Dome Light Supervision Output*
Trunk/Hatch Release Output*

* May Require Additional Parts & Labor

Common Security Features

Extended Range Antenna
Dual Stage Impact Sensor
Programmable Override Sequence
Remote Silent Arm/Disarm Capability
Event History Diagnostics
Selectable Siren Duration and Tones
False Alarm Prevention Circuitry

Common Remote Start Features

Extended Range Antenna
Anti-Grind Circuitry
Tachometer or Voltage Sensing
Gasoline or Diesel Vehicle Compatible
Over and Under Rev Protection
Built-in Wait-to-Start Timer
Selectable Run Timer
Short Run Timer / Turbo Timer Mode
Rear Defroster Activation

UNGO Feature Descriptions

Secure Digital Communications

In order to achieve a reliable 1-Mile of range from the SR9000, Clarion has implemented Spread Spectrum Technology Secure Digital Communication. Spread Spectrum Technology takes a signal (in the case of the SR9000, a rolling code that tells the system what do to) and spreads the code over a wide range of frequencies. The advantage of this is that because the signal is so spread out, it becomes more resistant to interference, and helps to guarantee the signal is received and decoded.

Ungo Spread Spectrum Technology operates at 900Mhz, further improving its resistance to interference

Anti-Carjacking

The optional anti-carjacking system feature is designed to ensure that any unauthorized user of the vehicle (even using the keys and remote control) will not be able to permanently separate the owner from their vehicle.

This system cannot prevent a carjacking attempt; however, it does ensure that if an unauthorized user takes the vehicle, it will be disabled (after several progressive warnings) as a safely as possible.

Anti-Code Grabbing Technology (a.k.a. Code Hopping):

The receiver and remotes use a mathematical formula called an algorithm to change their code each time the remote is used. This technology has been developed to increase the security of the unit. The control unit knows what the next codes should be. This helps to keep the remote “in sync” with the control unit even if you use the remote control out of range of the vehicle.

Anti-Grind Circuitry

Whenever the vehicle is remote started, advanced anti-grind circuitry prevents the starter from engaging, even if the key is turned to the start position. This prevents damage to the starter motor if the key is turned to the start position during remote start operation.

Built-in Wait-to-Start Timer

Diesel vehicles need adequate time to warm up the glow plugs prior to starting. When the remote start is activated, the wait-to-start timer will allow the glow plugs to properly warm up before engaging the starter circuit. This feature prevents damage to the motor and glow plugs during remote start operation.

Comfort Closure

If programmed ON the door lock output will activate the Comfort Closure output for 20 seconds. This output will begin 200mS after the final door lock output has completed regardless of the door lock programming. This feature is designed to integrate with vehicle that can close the power windows and sunroof by holding the key in the driver door lock position, and will operate on both single input systems and two pulse dead bolt systems.

Dome Light Supervision Output

The dome light will illuminate for 30 seconds each time the system is disarmed using the remote control. This is useful for seeing inside the vehicle at night prior to entering it.

Dual Stage Impact Sensor

A sensor mounted in the vehicle that is designed to pick up impacts to the vehicle or glass. Depending on the strength of the impact, the sensor can determine whether it's an accidental contact or actual violation attempt.

Event History Diagnostic

ProSecurity systems can provide notification that the alarm was previously triggered. The status LED will indicate which zone was involved. The system will retain this information in its memory, until the next time the ignition key is turned ON.

Extended Range Antenna

An optional external receiver/antenna used to upgrade the remote/receiver performance in areas of high radio interference such as military bases, airports, and hospitals.

False Alarm Prevention

It prevents annoying repetitive sequences due to faulty door pins switches or environmental conditions such as thunder, jackhammers, airport noise, etc.

Gasoline or Diesel Vehicle Compatible

ProSecurity remote start systems can be installed into either gasoline or diesel vehicles.

Hyper Blue LED

A blue LED (Light Emmiting Diode) mounted at a discretionary location inside the vehicle. It is used to indicate the status of your system.

Individual Remote Recognition

Individual Remote Recognition makes it possible to program different settings for each remote that is used with the system. Then, whenever a specific remote is used, the system will recall the setting assigned to that remote. IDR lets up to four users of the system have different settings that meet their specific needs. It is almost like having four separate alarms in your vehicle, one for each user.

Keyless Entry

Allows for easy entry or exiting of the vehicle without having fumbling around for keys. May require additional parts and labor.

Over and Under Rev Protection

The system monitors the engine speed and will automatically shut the engine off if the RPMs rise above or fall below the programmed levels. This feature prevents damage to the motor due to fuel delivery system failures or other problems, which may cause the engine to race.

Programmable Override Sequence

ProSecurity systems can be programmed to respond to one to five pulses of the Valet/ Override Switch for the disarm function.

Progressive Door Unlock

For added security, the ProSecurity system can be configured to unlock the driver's door only, leaving the passenger doors locked. Pressing the UNLOCK button an additional time will unlock the passenger doors. This option requires additional parts and labor.

ProSecurity Power Up

The ProSecurity system will store its current state of non-volatile memory. If the power is lost and then reconnected the system will recall the stored state from memory. This means if the unit is in Valet Mode and the battery is disconnected for any reason, when the battery is reconnected the unit will still be in Valet Mode.

ProSecurity Starter Disable

An automatic switch controlled by your system that prevents the vehicle's starter from cranking whenever the system is armed. The vehicle is never prevented from cranking when the system is disarmed, in Valet Mode, or if the starter interrupt switch itself fails.

Rear Defroster Activation

During remote start operation, the rear defroster can be activated. This option requires additional parts and labor.

Remote Enabled Valet (REV)

The security system will not arm, even with the remote, but all convenience functions (door locks, trunk release, etc.) will still continue to work normally. REV allows access to Valet Mode without having to disclose the location of the Valet/Override switch.

Remote Panic

If you are threatened in or near your vehicle, you can attract attention by triggering the system with your remote control. Just press the "PANIC" or "LOCK" button for two seconds, and you will enter Panic Mode. The siren will sound and the parking lights will flash for the programmed siren duration. To stop Panic Mode at any time, press the "LOCK" button on the remote.

Remote Silent Arm/Disarm Capability

The siren chirps upon arm or disarm can be temporarily eliminated for that one operation only. The siren arm/disarm chirps can be turned off permanently, if desired. The siren chirps will also be eliminated during the warn-away trigger of the Dual Stage Impact Sensor.

Selectable Ignition Controlled Door Locks

When the ignition is turned ON, the doors will lock within 3 seconds and unlock when the ignition is turned OFF. Ignition controlled lock and unlock are independent features are can be programmed separately.

Selectable Siren Duration and Tones

The duration of the siren can be programmed to either 30 or 60 seconds. Some states have laws regulating how long a security system can sound. The multi-tone sirens included with ProSecurity systems can be easily modified to select desired tones or single tone.

Short Run Timer / Turbo Timer Mode

Short run turbo mode keeps the engine running after arriving at your destination for a programmable period of time.

Tachometer or Voltage Sensing

ProSecurity remote start systems either use a tachometer signal or sense the voltage of the vehicle during remote start activation. These signals inform the remote start system that the vehicle has successfully started and is running.

The system's auxiliary output can be programmed to operate a factory power release for the vehicle's trunk or hatch. If the factory release is not power activated, an optional trunk release solenoid can often be added.

Trunk/Hatch Release Output

The system's auxiliary output can be programmed to operate a factory power release for the vehicle's trunk or hatch. If the factory release is not power activated, an optional trunk release solenoid can often be added. This output will then disable / ignore the two-stage shock sensor as you load and unload the vehicle.

Obtaining Optimal Range

Mounting the Extended Range Antenna:
1. Clean the mounting area with a quality glass cleaner or alcohol to remove any dirt or residue.
2. Plug the receiver/antenna cable into the receiver/antenna.
3. Mount the receiver/antenna vertically using the supplied double-sided tape.
4. Route the receiver/antenna cable to the control module and plug it into the four-pin antenna connector.

Important:
• To achieve the best possible range, DO NOT leave the antenna cable bundled up tightly underneath the dash. Try to extend the cable the full length during installation.
• DO NOT mount the control module to close the vehicle's Body Control Module and/or Electronic Control Modules.

Mounting the Standard Antenna:
1. Route the antenna as high up as possible, extending it to its full length.
2. Secure it in place using a cable tie.

Important:
• DO NOT cut or extend the antenna, as it's tuned precisely to the control unit.
• Route the antenna away from moving parts under the dash and from the vehicle's Body Control Module and/or Electronic Control Modules.

Mounting the Control Unit:
• Do not mount or secure the control unit to close to the vehicle's Body Control Module and/or Electronic Control Modules.
• Do not mount or secure the control unit to close sources of heat, such as the heater core and/or air ducts.
• Ground the control unit to a clean, paint-free sheet metal location using a factory bolt that DOES NOT have any vehicle component grounds attached to it. A screw should only be used when in conjunction with a two-sided lock washer. Under dash brackets and door sheet metal are not acceptable ground points.

It is recommended that all security components be grounded at the same location.

Turning Off the Anti-Code Grabbing Technology (a.k.a. Code Hopping):
Although this is a feature designed to prevent the remote transmitters from being cloned and retransmitted to the control unit, it is virtual impossible to do. "Code Grabbers" have a very limited range, usually required to within 5 feet of the remote transmitter while the button is being depressed. By turning the off the Anti-Code Grabbing feature, it can increase the receiving/transmitting range by 30-35%.

Refer to the "System Features Menu" for the Feature Number and programming instructions.

Double Stacking (2) CR2016 Batteries:
The CR2032 3-volt micro lithium coin cell battery inside of the SAA474U (4-button) remote transmitter can be substituted with (2) CR2016 3-volt batteries. This can increase the range between 65-75%, depending on the surroundings.

Procedure:
1. Insert a small flat head screwdriver into the notch on the bottom of the remote transmitter.
2. Gently twist the screwdriver to spreading apart the two halves of the remote transmitter.
3. Open up the remote transmitter exposing the CR2032 battery and slide it out.
4. Slide (2) CR2016 batteries into the battery holder with the "+" facing upwards. (It may be easier to slide one battery in at a time. With the first battery in place, slide the second battery between the PC board and battery.)
5. Prior to closing the two halves of the remote transmitter, verify the batteries are installed correctly by pressing any of the buttons. The green LED indicator should illuminate when a button is pressed. If the LED does not illuminate, double-check the direction of the batteries. The "+" should be facing upwards matching the "+" on the battery retaining clip.
6. Snap together the two halves of the remote transmitter.

Obtaining a Tachometer Reference Signal

The tachometer reference signal is an essential signal for the safe operation of a remote start system. This signal informs the remote start module that the vehicle has successfully started and is running. It can also determine whether the vehicle is idling at a safe RPM level. In the event the vehicles idle is racing or below safer operating level, the remote start module will shut down.

To test for a tachometer wire, a multi-meter capable of test AC voltage must be used. The tachometer wire will show between 1V and 6V AC. In multi-coil systems, the system can learn individual coil wires. Individual coil wires in a multi-coil ignition system will register lower amounts of AC voltage. Also, if necessary, the system can use a fuel injector control wire for engine speed sensing. Common locations for a tachometer wire are at the ignition coil, back of the gauge cluster, engine computers, and automatic transmission computers.

How to Find a Tachometer Wire with a Multi-Meter:
1. Set the multi-meter to ACV or AC voltage (12V or 20V is fine)
2. Attach the (-) probe of the meter to chassis ground.
3. Start the vehicle and allow it to reach its normal idle speed.
4. Probe the wire you suspect of being the tachometer wire with the red probe of the meter.
5. If it's the correct wire the meter will read between 1V and 6V.

Multi-Coil Systems:
1. Examine the individual coils and determine which wires are common on each coil. (Example: 2002 Chevy Pick-up: Each coil has 4 wires, three common wires on each coil and the 4th wire changes.)
2. The "different" colored wire can be used for the tachometer reference signal for the remote start module. (Only one coil wire is necessary.)
3. Teach tachometer reference signal to the remote start module.

It is highly recommended to solder this connection, due to the heat generated inside the engine bay. Using t-taps or scotch-locks are likely to fail due to the heat.

Fuel Injector Wire:
1. Examine the individual fuel injectors and determine which wire(s) are common on each fuel injector.
2. The "different" colored wire can be used for the tachometer reference signal for the remote start module. (Only one fuel injector wire is necessary.)
3. Teach tachometer reference signal to the remote start module.

It is highly recommended to solder this connection, due to the heat generated inside the engine bay. Using t-taps or scotch-locks are likely to fail due to the heat.

Tachometer Reference Options

Tachless
If programmed to the voltage sense setting, the unit will crank the starter for a preset time during. Once the starter has been engaged, the system will check the voltage level to verify the engine is running.

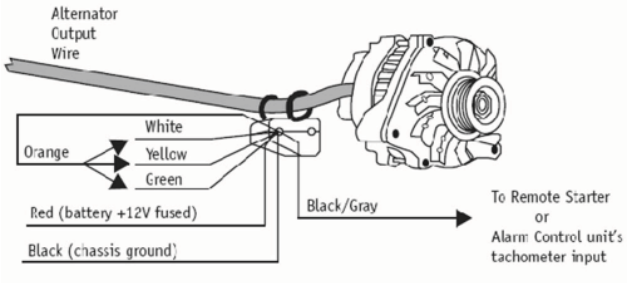
When using tachless operation, it is essential to determine the correct crank time to prevent damage to the starter. It may take several remote start activations to determine the crank time.

Some vehicles have many accessories, which are turned on during remote start activation. In these vehicles, the variation of voltage between the engine off and the vehicle running is very slight and the remote start module may "think" the vehicle has not started. This can cause the remote start module to shut down after the vehicle has been started. If this is the case, the Voltage Check Level must be set to the LOW position.

Voltage sensing is not recommended in areas that experience extreme cold temperatures. The resistance in the vehicles wiring increases which can cause intermittent remote start reliability.

454T: Alternator RPM Monitor

The 454T Alternator RPM Monitor is for use with remote engine starts as an alternative to direct connection to the vehicle's tachometer or fuel injector wire. It detects electrical spikes in the vehicles electrical system and converts them into an output that simulates a tachometer.



Remote Start Terms and Definitions

Immobilizer (a.k.a.: Transponder)

The Immobilizer uses an antenna ring around the ignition cylinder to energize a small transponder chip hidden in the ignition key. When the ignition is turned on, the chip is energized and the antenna rings sends the code to the Immobilizer control unit. The vehicle will only start if the code matches the one programmed into the vehicle.

Passkey/VATS

The Passkey/VATS system consists of four parts: the Passkey cylinder, the ignition switch, the instrument cluster panel (IPC), and the power train control module (PCM). The system requires that the key cylinder be mechanically turned using a key. When the key cylinder is properly turned, it generates a resistance code (R-Code), which is sent to the IPC. The vehicle will only start if the R-Codes match the key and key cylinder.

Passlock 2

The Passlock 2 system must see the correct resistance code at the correct time. When the ignition switch is turned to the crank position, the "Bulb Check" wire is switched to ground. This starts a time window during which the instrument cluster panel (IPC) analyzes the resistance code (R-Code). If the R-Code is valid and is received in the proper window of time, the IPC sends a code via data bus to the PCM to enable the fuel injection system. If the key cylinder itself is pulled out or damaged, it will not generate the resistance code and the vehicle will not run.

Passkey 3

The Immobilizer uses an antenna ring around the ignition cylinder to energize a small transponder chip hidden in the ignition key. When the ignition is turned on, the chip is energized and the antenna rings sends the code to the Immobilizer control unit. If the code is incorrect the vehicle will not start.

PATS

Passive Anti-Theft System (PATS) uses a specially programmed key to start the vehicle, similar to the Immobilizer. It uses an antenna ring around the ignition cylinder to energize a small transponder chip hidden in the ignition key. When the ignition is turned on, the chip is energized and the antenna ring sends the code to the PATS control unit. If the code is incorrect the vehicle will not start.

Resistor

One of the components necessary in interface with VATS factory anti-theft systems. A resistor(s) are used in conjunction to reproduce the resistance code (R-Code) embedded in the vehicle's key

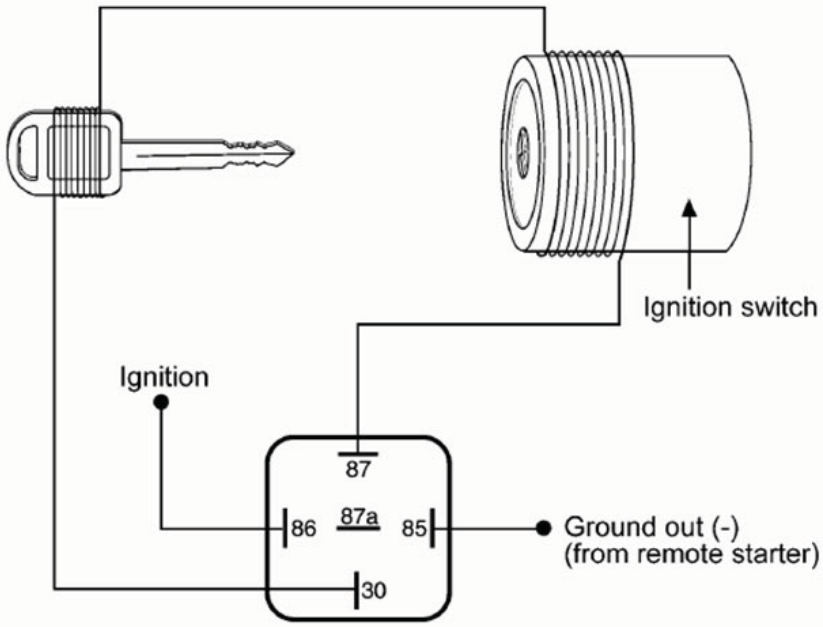
Replacement Remote Controls

Model Number	Remote Description	Remote Part Number
5000-1	1 BUTTON TRANSMITTER FOR 5000 SERIES	SAA3651
5000-2	2 BUTTON TRANSMITTER FOR 5000-2 SERIES	SAA3652
6200	2 BUTTON TRANSMITTER (RED LED)	SAA3623
6200V	2 BUTTON VARICODE TRANSMITTER	SAA3624
6400	2 BUTTON TRANSMITTER (RED LED)	SAA3623
6400V	2 BUTTON VARICODE TRANSMITTER	SAA3624
6500	4 BUTTON TRANSMITTER (RED LED)	SAA3649
6500V	4 BUTTON VARICODE TRANSMITTER	SAA3650
CS100	2 BUTTON VARICODE TRANSMITTER	SAA3624
CS105	2 BUTTON REMOTE TRANSMITTER FOR CS105	SAA200T
CS150	3 BUTTON REMOTE TRANSMITTER	SAA150T
CS200	2 BUTTON REMOTE TRANSMITTER FOR CS200	SAA200T
G1100	3 BUTTON REMOTE TRANSMITTER	SAA003T
G1100	4 BUTTON REMOTE TRANSMITTER	SAA004T
GUARDSMAN	2 BUTTON GUARDSMAN TRANSMITTER	SAA3601
GUARDSMAN	VARICODE TRANSMITTER - 1000V SERIES	SAA3100
K10	4 BUTTON REMOTE TRANSMITTER	SAA474U
KE106	3 BUTTON REMOTE TRANSMITTER	SAA003T
KE106	4 BUTTON REMOTE TRANSMITTER	SAA004T
MC500	2 BUTTON VARICODE TRANSMITTER	SMA3255
MS1000	2 BUTTON VARICODE TRANSMITTER	SAA3624
MS1001	2 BUTTON VARICODE 2 TRANSMITTER	SAA3704
MS2000	3 BUTTON REMOTE TRANSMITTER	SAA003T
MS2000	4 BUTTON REMOTE TRANSMITTER	SAA004T
MC2000V	2 BUTTON VARICODE TRANSMITTER	SMA3255
MS2002	3 BUTTON REMOTE TRANSMITTER W/PURPLE BUTTONS	SAA3715
MS2004	4 BUTTON REMOTE TRANSMITTER	SAA004T
MS2005	4 BUTTON REMOTE TRANSMITTER	SAA004T
MS2006	5 BUTTON REMOTE TRANSMITTER	SAA005T
MS2007	5 BUTTON FM 2-WAY LCD TRANSMITTER	SAA217T Generic
MS2100	5 BUTTON REMOTE TRANSMITTER	SAA205T
MS2105	5 BUTTON REMOTE TRANSMITTER	SAA205T
MS2106	5 BUTTON REMOTE TRANSMITTER	SAA205T
MS2107	5 BUTTON REMOTE TRANSMITTER	SAA205T
MS2107	5 BUTTON FM 2-WAY LCD TRANSMITTER	SAA217T
MS3001	3 BUTTON VARICODE 2 TRANSMITTER	SAA3705

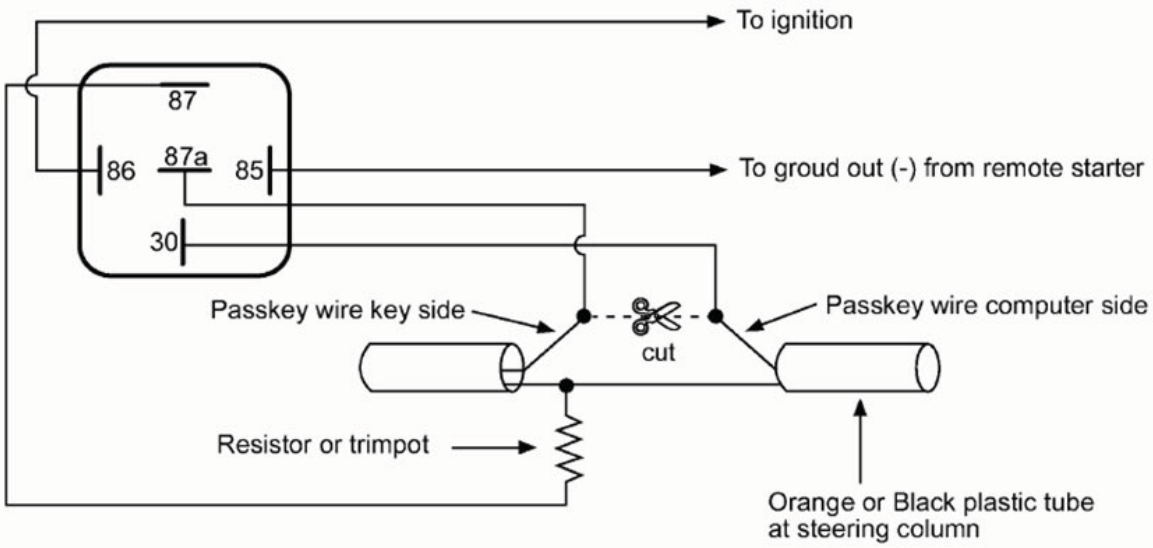
MS3200	3 BUTTON VARICODE 2 TRANSMITTER	SAA3705
MS3200	3 BUTTON VARICODE 2 TRANSMITTER	SAA3706
MS3200	3 BUTTON REMOTE TRANSMITTER W/PURPLE BUTTONS	SAA3715
MS5000	3 BUTTON VARICODE 2 TRANSMITTER	SAA3703
MS5500	3 BUTTON REMOTE TRANSMITTER W/ BLUE BUTTONS	SAA3716
MS5505	3 BUTTON VARICODE 2 TRANSMITTER	SAA3716
MS7000	3 BUTTON VARICODE 2 TRANSMITTER	SAA3703
MS8200	3 BUTTON VARICODE 2 TRANSMITTER	SAA3706
MS8200	3 BUTTON REMOTE TRANSMITTER W/ BLUE BUTTONS	SAA3716
MS8300	3 BUTTON VARICODE 2 TRANSMITTER	SAA3706
MS8300	3 BUTTON REMOTE TRANSMITTER W/ BLUE BUTTONS	SAA3716
MS850	2 BUTTON REMOTE TRANSMITTER W/PURPLE BUTTONS	SAA3714
MS9000	3 BUTTON VARICODE 2 TRANSMITTER	SAA3703
RK1	4 BUTTON REMOTE TRANSMITTER	SAA474U
RS151	4 BUTTON REMOTE TRANSMITTER	SAA004T
RS251	4 BUTTON REMOTE TRANSMITTER	SAA251T
RS300	5 BUTTON REMOTE TRANSMITTER	SAA205T
S100	4 BUTTON REMOTE TRANSMITTER	SAA474U
S400	4 BUTTON REMOTE TRANSMITTER	SAA474U
S660	2-WAY REMOTE TRANSMITTER	SAA477U
S670	2-WAY REMOTE TRANSMITTER	SAA477U
RS10	4 BUTTON REMOTE TRANSMITTER (Number Pads SAA874)	SAA474U
K10	4 BUTTON REMOTE TRANSMITTER	SAA474U
K20	4 BUTTON REMOTE TRANSMITTER	SAA474U
SAS6200	2 BUTTON VARICODE TRANSMITTER	SAA3624
SAS6400	2 BUTTON VARICODE TRANSMITTER	SAA3624
SAS6500	4 BUTTON VARICODE TRANSMITTER	SAA3650
SMS0500	2 BUTTON VARICODE TRANSMITTER	SAA3624
SMS2000	2 BUTTON VARICODE TRANSMITTER	SAA3624
SR1000	4 BUTTON REMOTE TRANSMITTER	SAA474U
SR5000	2-WAY LCD TRANSMITTER	SAA477U
SR5000	4 BUTTON REMOTE TRANSMITTER	SAA474U
SR6000	2-WAY LCD TRANSMITTER	SAA477U
SR6000	4 BUTTON REMOTE TRANSMITTER	SAA474U
SR9000	2-WAY SST REMOTE TRANSMITTER	SAA7701U
TECHNE	1 BUTTON TRANSMITTER - JUMPER PROGRAMMING	SAA3621
TECHNE	2 BUTTON TRANSMITTER - JUMPER PROGRAMMING	SAA3622

UNGO – Application Notes

HOW IT WORKS: There is a small chip in the ignition key called a ***transponder***. When the key is inserted into the ignition switch it sends a code to the vehicles computer through a receiver coil mounted to the barrel. Once the computer has identified it as a valid key, it enables the starter and fuel management systems. At present, there is no way to get around this security without sacrificing 1 of the vehicles keys and installing it under the dash as shown in our diagram. If the vehicle only has 2 keys and 1 can not be spared, a new key must be purchased ***and coded*** to the vehicle by the dealer. That key can then be used in the bypass.

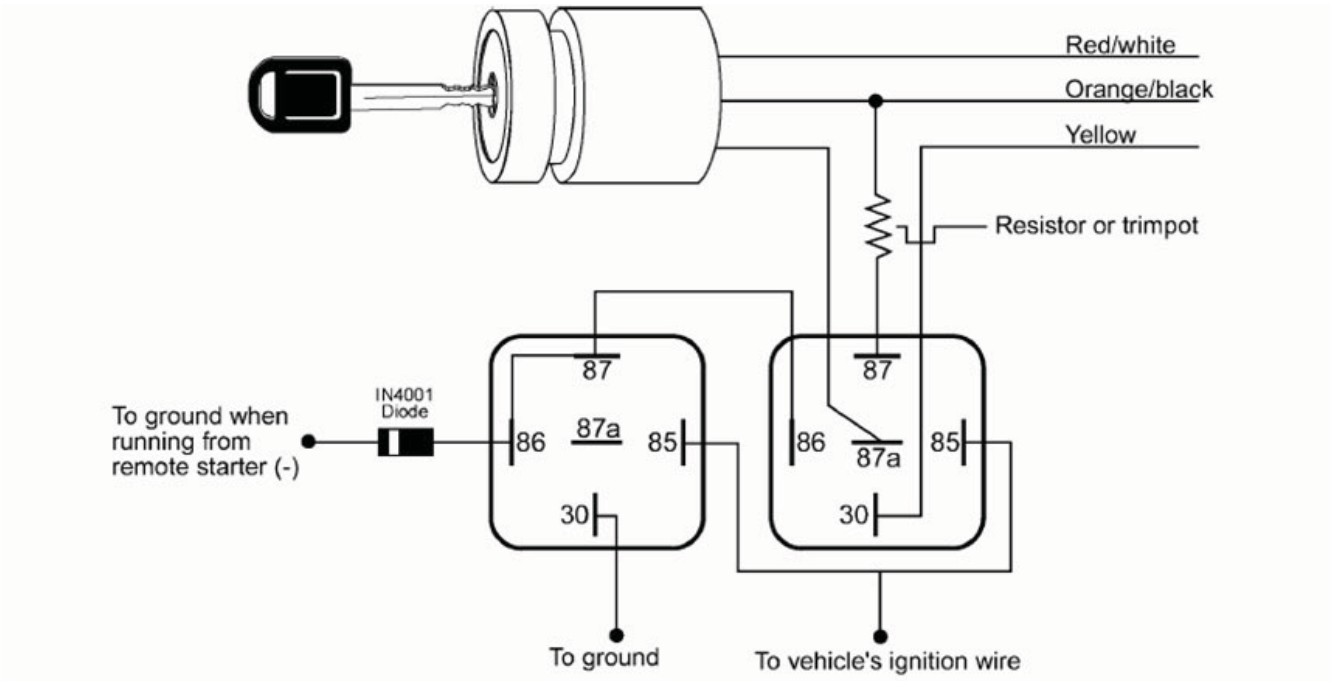


Use small 24-26 gauge wire. Wrap the wire around the up most front of the ignition switch approximately 9-10 times, then extend the wire out about 12-15 inches and wrap it around the key about 9-10 times. Take both ends of the wire and connect then to a relay as shown above. The **GROUND OUT** on pin #85 of the relay refers to the wire from your remote starter that goes to ground when the starter is activated. Once this circuit is tested and working, the keyway should either be cut in half or the key should be hidden well under the dash.



This system uses a resistor in the key, use a digital volt meter set to ohms and put 1 lead on each side of the vats chip in the center of the key, find a resistor to match your reading and proceed to wire a relay as per the diagram.
Locate the Orange or black tube running down the steering column from the ignition switch. Cut open the tube to expose the passkey wires inside. Your resistor or trumpet should be within +/- 10 ohms of the key. Either of the passkey wires can be cut. GM uses only a fixed number of different resistors with their **PASSKEY/VATS** system, your measurement should correspond to one of the following values.

390 Ohms	**1800 Ohms**	**7500 Ohms**
520 Ohms	**2370 Ohms**	**9530 Ohms**
680 Ohms	**3010 Ohms**	**11800 Ohms**
885 Ohms	**3740 Ohms**	
1130 Ohms	**4750 Ohms**	
1470 Ohms	**6040 Ohms**	



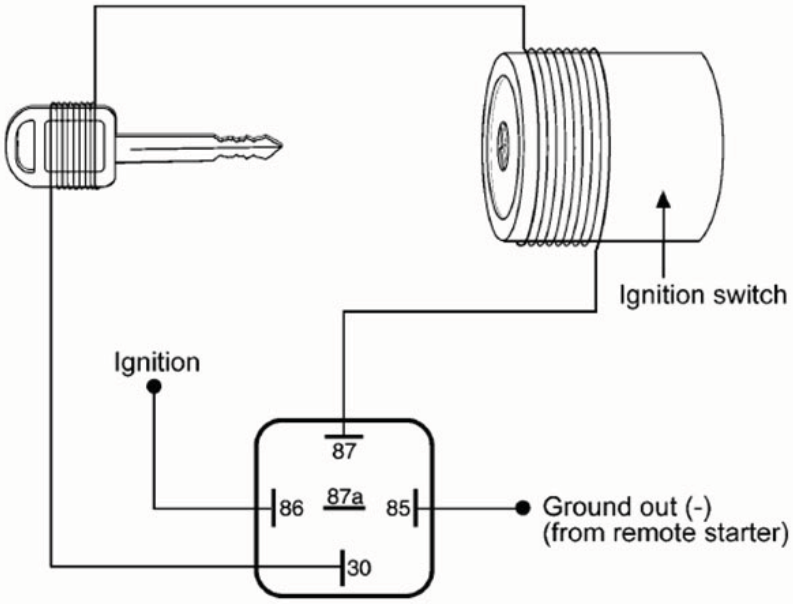
All GM trucks 1998 & up are equipped with PASSLOCK II security systems. In many ways it is like the PASSLOCK I system found on the 96-97 Cavalier and Sunfire, but with a few small changes. There is no bulb test wire on the ignition switch and the measurement for your resistor must be taken with the engine running.

1. Start the car with the key
2. Locate the 3 small wires (YELLOW, ORANGE/BLACK and RED/WHITE) coming from the ignition switch.
3. Separate the wires and cut the YELLOW wire in half.
4. Splice open the ORANGE/BLACK wire but do not cut it.
5. Use a digital ohm meter, attach 1 lead to the ORANGE/BLACK wire and the other lead to the Key side of the YELLOW wire.
6. Find a resistor of the same value +/- 10 ohms.
7. Wire 2 relays as shown

PLEASE NOTE: This is a fuel cut-off system. If the PASSLOCK II system is not properly bypassed the engine will immediately shut down after remote start. If this occurs verify that all the wiring is properly connected and that your resistor is within the allowable parameters.

Interfacing with Passkey 3 systems with Relays and Key

HOW IT WORKS: There is a small chip in the ignition key called a ***transponder***. When the key is inserted into the ignition switch it sends a code to the vehicles computer through a receiver coil mounted to the barrel. Once the computer has identified it as a valid key, it enables the starter and fuel management systems. At present, there is no way to get around this security without sacrificing 1 of the vehicles keys and installing it under the dash as shown in our diagram. If the vehicle only has 2 keys and 1 can not be spared, a new key must be purchased ***and coded*** to the vehicle by the dealer. That key can then be used in the bypass.



Use small 24-26 gauge wire. Wrap the wire around the up most front of the ignition switch approximately 9-10 times, then extend the wire out about 12-15 inches and wrap it around the key about 9-10 times. Take both ends of the wire and connect then to a relay as shown above. The **GROUND OUT** on pin #85 of the relay refers to the wire from your remote starter that goes to ground when the starter is activated. Once this circuit is tested and working, the keyway should either be cut in half or the key should be hidden well under the dash.

UNGO – Remote Start Diagnostics

Remote Start Diagnostics

In the event that a remote start system fails to start, or stops running after a short period of time, you can retrieve the source of the shutdown from the UNGO ProSecurity system

1. Turn the Ignition off
2. Press and hold the Override switch
3. Turn the ignition on then off
4. Release the Override switch
5. Press and release the Override switch.

The LED will now report the last system shutdown by flashing one of the following patterns for a period of one minute.

LED Flashes	Shutdown Cause
One	System Timed Out
Two	Over-Rev Shutdown
Three	Low or no RPM
Four	Remote Shutdown or optional button
Six	+/- Shutdown
Seven	(-) Neutral safety shutdown
Eight	Wait-to-start timed out.

Remote Start Troubleshooting

The ignition comes on, but the starter will not crank

1. Does it start with the key in the ignition? If so, does the vehicle have a VATS Pass-Key system?
2. Will it start with the brake pedal depressed? (Make sure to disconnect the brake shutdown when performing this test.) If so, it may have a brake/starter interlock.
3. Is the correct starter wire being energized? Check by energizing it yourself with a fused test lead.

The starter cranks for six seconds but does not start.

1. Either the wrong ignition wire is being energized, the unit's ignition and accessory wires have been connected backwards, or the vehicle has two ignition circuits. Try activating the unit with the ignition key in the "run" position. If the vehicle then runs normally, retest your ignition system.

The starter continues to crank even though the engine has started.

1. Has the tach wire been learned? See Tach Learning section of the installation guide.
2. Is the tach wire receiving the correct information? Either the wrong tach wire has been used, or a bad connection exists.

The climate control system does not work while the unit is operating the vehicle.

Either the wrong accessory wire is being energized or more than one ignition or accessory wire must be energized in order to operate the climate control system.

The remote start will not activate.

1. Check harnesses and connections. Make sure the harnesses are fully plugged into the remote start module. Make sure there are good connections to the vehicle wiring.
2. Check voltage and fuses. Use a meter and check for voltage between the red wire in the 5 pin ribbon harness and the black ground wire. If you have less than battery voltage, check both 30A fuses on the relay satellite. Also make sure that the ground wire is going to a chassis ground and not to something under the dash.
3. Check diagnostics. The diagnostics will tell you which shutdown is active or not connected.

The remote start will activate but the starter never engages.

1. Check for voltage on the purple starter wire two seconds after the remote start becomes active. If there is voltage present, skip to Step 4. If there is not voltage present, advance to Step 2.
2. Check the 30A fuses.
3. Check diagnostics. If the gray/black wire is detecting ground upon activation, the starter will not crank.
4. Make sure the purple starter wire is connected to the correct starter wire.
5. Does the vehicle have an immobilizer? Some immobilizer systems will not allow the vehicle to crank if active.
6. Check connections. The two red heavy gauge input wires on the relay satellite should have solid connections. "T-taps", or "scotch locks" are not

recommended for any high current heavy gauge wiring. Also, if the vehicle has more than one 12-volt input wire, then connect one red wire to each.

The vehicle starts, but immediately dies

1. Does the vehicle have an immobilizer? The vehicles immobilizer will cut the fuel and/or spark during unauthorized starting attempts.
2. Is the remote start programmed for voltage sense? If so, the start time may not be set high enough, or you may have to adjust the voltage threshold in programming. Voltage sense will not work on some vehicles.
3. Check diagnostics. Sometimes a shutdown will become active during cranking or just after cranking.

The vehicle starts, but the starter keeps running

1. Is the system programmed for engine checking off or voltage sense? When programmed for either of these features, the engine cranks for the preprogrammed crank time regardless of how long it takes to start the vehicle to actually start. Adjust to a lower cranking time.

2. Was the Tach Learn successful? The LED must light solidly and brightly to indicate a successful learn.

3. Make sure that there is a tach signal right at the purple/white tach input wire of the remote start. If not, recheck the connection to the vehicle's tach wire and make sure the wire is not broken or shorted to ground leading to the remote start.

The vehicle will start and run only for about 10 seconds

1. Is the remote start programmed for voltage sense? Try programming the unit for low voltage reference. If this does not work, a tach wire should be used.
2. Check diagnostics.

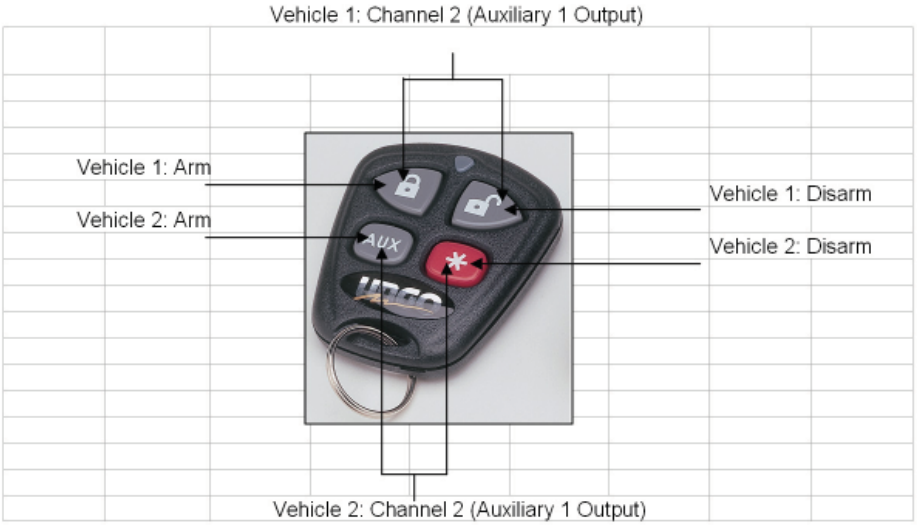
UNGO – Multiple Vehicle Operation

Technical Information: Multiple Vehicle Operation

Ungo ProSecurity remote transmitters are capable of operating multiple vehicles equipped with ProSecurity systems. This is beneficial for individuals with multiple vehicles and/or reducing the clutter on a key-chain.

1. Follow the remote programming procedure for the particular ProSecurity system and delete all the remote transmitters for both vehicles.
2. Follow the remote programming procedure for the particular ProSecurity system and program the desired function to the assigned button. Continue this process until all the button assignments have been complete on both vehicles.

EXAMPLE: S100 Multiple Vehicle Operation



Programming Vehicle 1.

1. Open the door of the Vehicle 1.
2. Turn the ignition ON
3. Press the Valet/Override button 9 times and then press it one more time and hold it in. The LED will flash 9 times indicating that selection.
4. Release the Valet/Override button and turn the ignition OFF and then back ON.
5. Press the Valet/Override button 4 times and then press it one more time and hold it in.
6. Press the LOCK button on each remote transmitter. The LED will flash 4 times indicating that selection.
7. Release the Valet/Override button and press it 1 time and then hold it in. The LED will flash 5 times indicating that selection.
8. Press the UNLOCK button on each remote transmitter. The LED will flash 5 times indicating that selection.
9. Release the Valet/Override button and turn the ignition OFF and then back ON.
10. Turn the ignition ON.
11. Press the Valet/Override button 2 times and then press it one more time and hold it in.
12. Press both the LOCK and UNLOCK buttons together on each remote transmitter. The LED will flash 2 times indicating that selection.
13. Release the Valet/Override button and turn the ignition OFF.

Vehicle 1:
LOCK: Arm (Lock)
UNLOCK: Disarm (Unlock)
LOCK & UNLOCK: Channel 2 (Auxiliary 1)

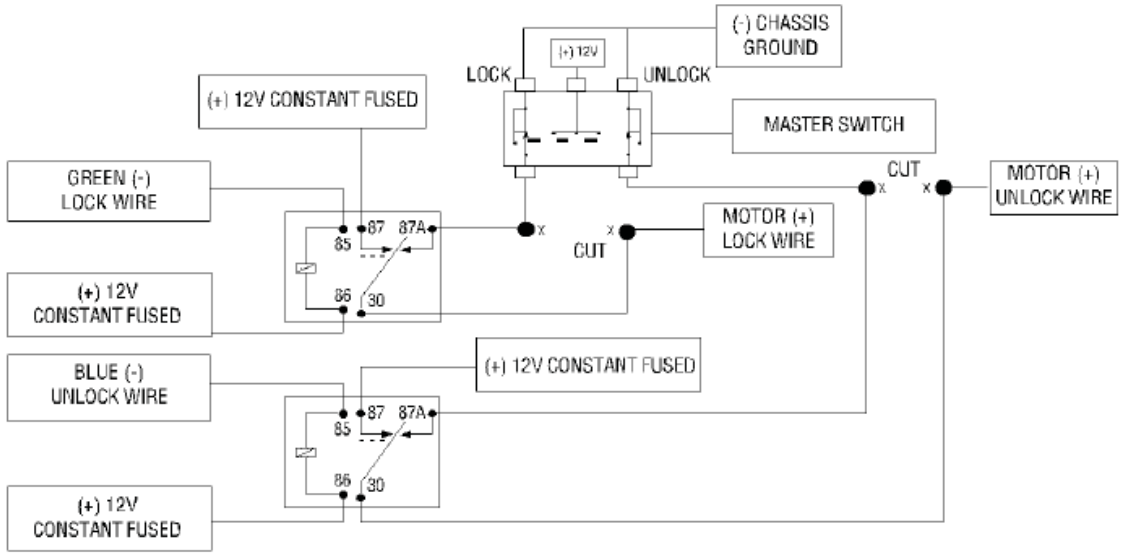
Programming Vehicle 2

1. Open the door of the Vehicle 2.
2. Turn the ignition ON
3. Press the Valet/Override button 9 times and then press it one more time and hold it in. The LED will flash 9 times indicating that selection.
4. Release the Valet/Override button and turn the ignition OFF and then back ON.
5. Press the Valet/Override button 4 times and then press it one more time and hold it in.
6. Press the AUX button on each remote transmitter. The LED will flash 4 times indicating that selection.
7. Release the Valet/Override button and press it 1 time and then hold it in. The LED will flash 5 times indicating that selection.
8. Press the "*" button on each remote transmitter. The LED will flash 5 times indicating that selection.
9. Release the Valet/Override button and turn the ignition OFF and then back ON.
10. Turn the ignition ON.
11. Press the Valet/Override button 2 times and then press it one more time and hold it in.
12. Press both the AUX and "*" buttons together on each remote transmitter. The LED will flash 2 times indicating that selection.
13. Release the Valet/Override button and turn the ignition OFF.

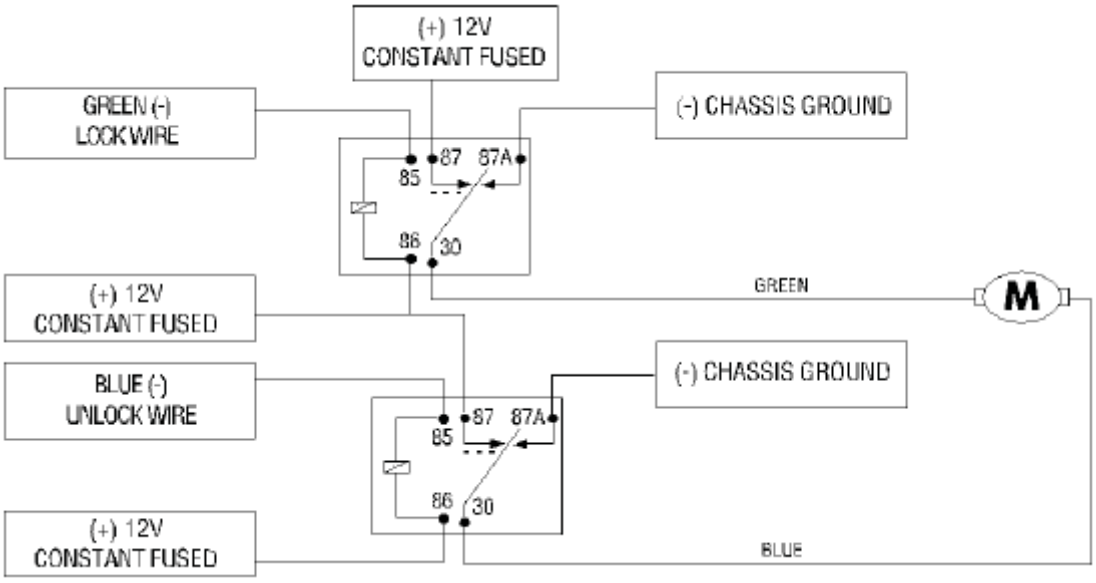
Vehicle 2:
AUX: Arm (Lock)
"*": Disarm (Unlock)
AUX and "*": Channel 2 (Auxiliary 1)

UNGO – Door Lock Application Guide

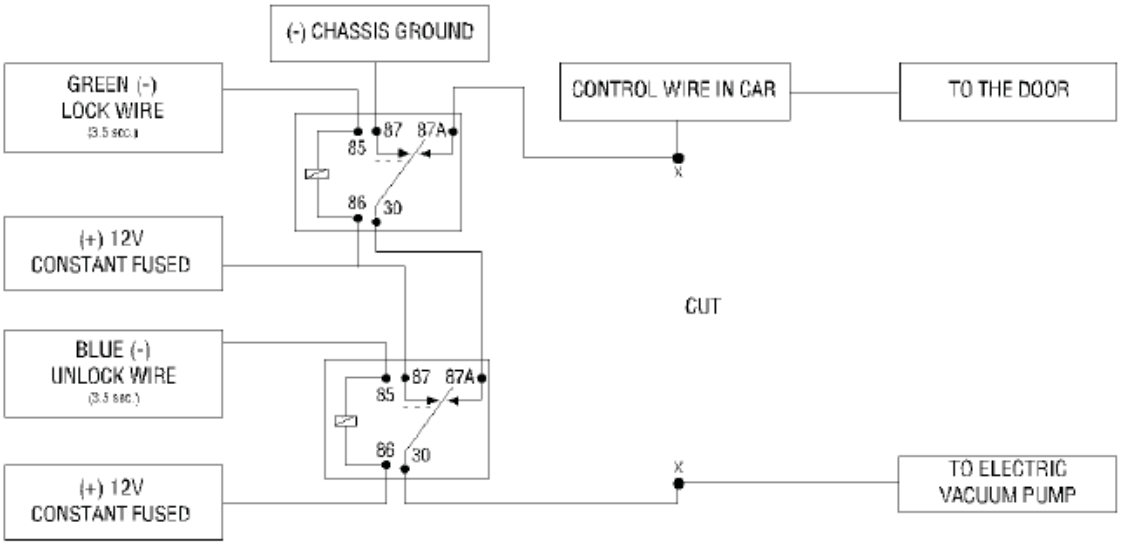
Reverse Polarity Door Lock Systems



Aftermarket Door Lock Actuators

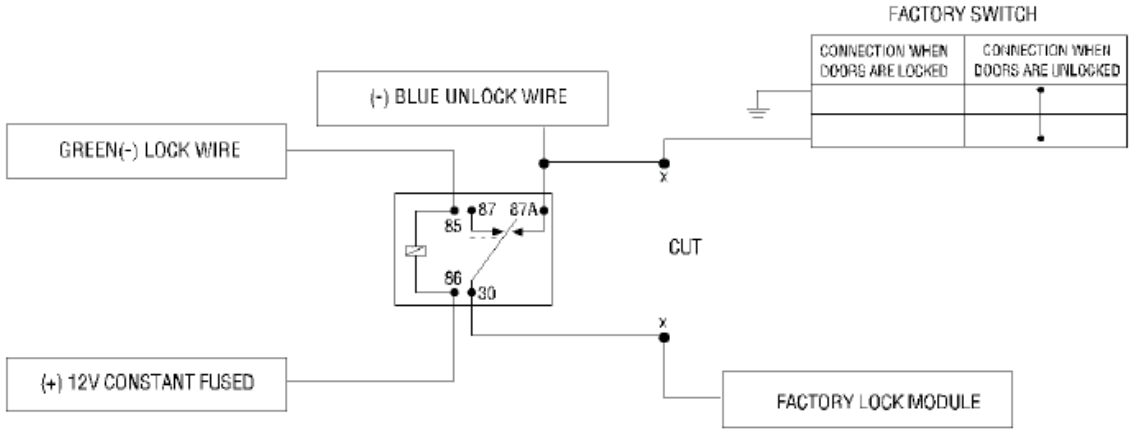


Vacuum Door Lock Systems



The lock pulse duration my be programmed to 3.5 seconds

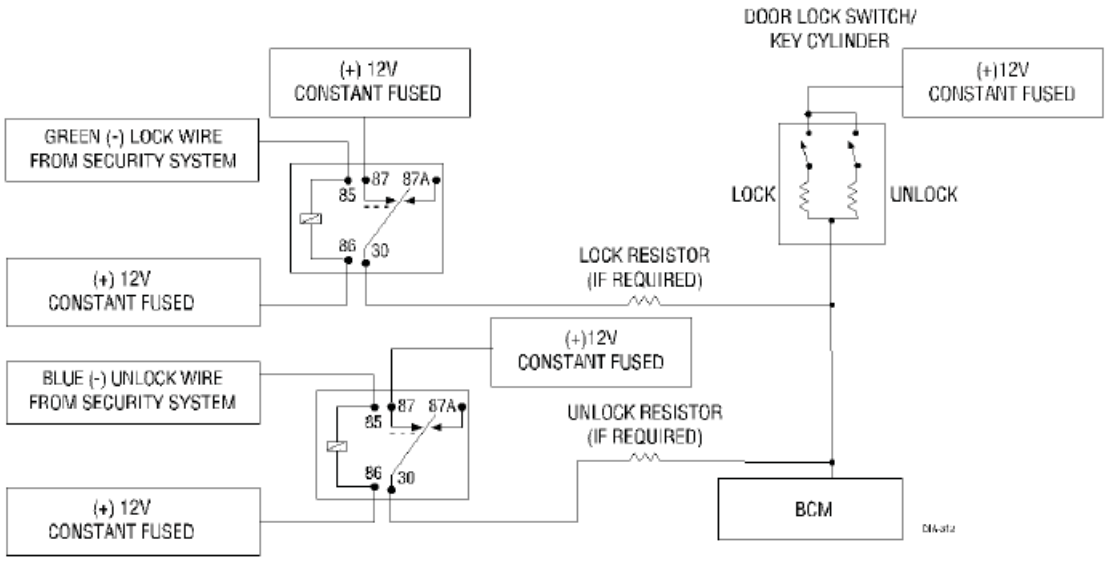
One-Wire Door Lock System
This door lock system requires a negative pulse to unlock the foors , and cutting the wire to lock the doors.



UNGO – Door Lock Application Guide

Multiplexed Door Lock Systems
Multiplexed door lock systems have more than one function on the same wire and require the use of different resistor values. It is necessary to use external relays any time a resistor is used.

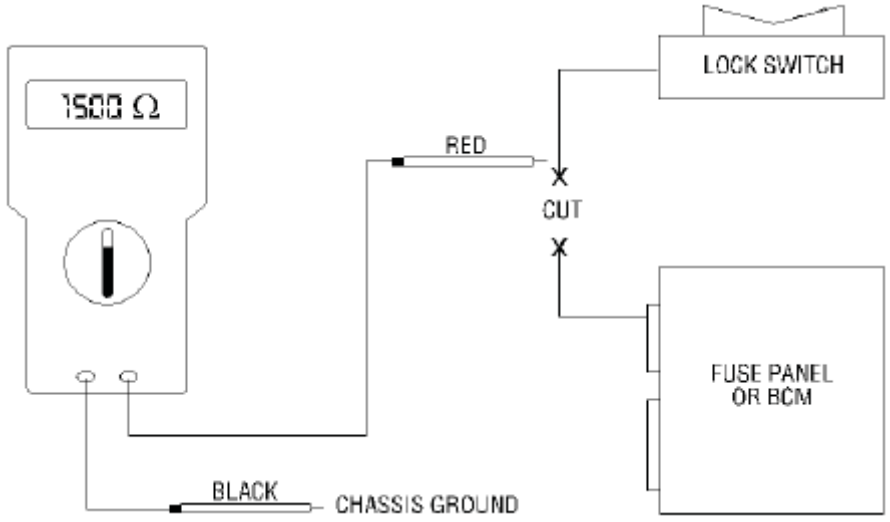
Positive Trigger Multiplexed Door Lock System



Test Procedure for Multiplexed Door Lock Systems:

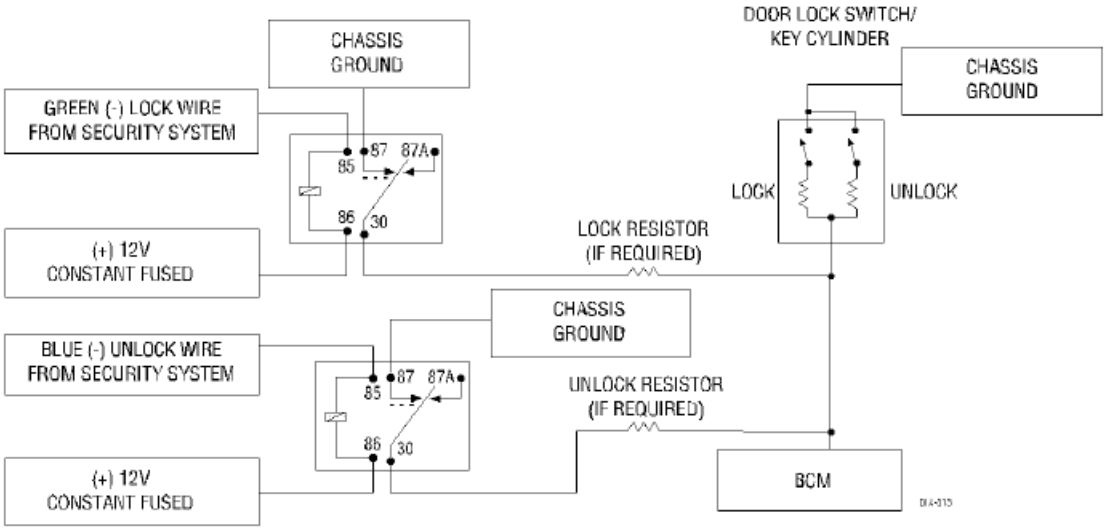
1. Locate the Lock/Unlock wire in the vehicle.
2. Cut the wire in half and determine the polarity of the wire.
3. Using a digital multimeter, measure the resistance for Lock and Unlock. (See Diagram)

Test Configuration for Positive Door Lock Systems



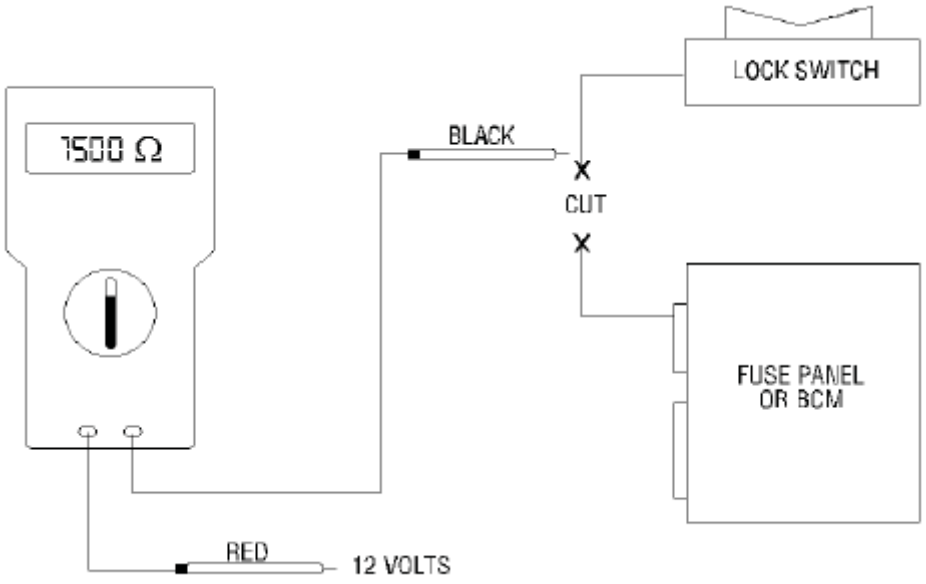
Multiplexed Door Lock Systems
Multiplexed door lock systems have more than one function on the same wire and require the use of different resistor values. It is necessary to use external relays any time a resistor is used.

Negative Trigger Multiplexed Door Lock System



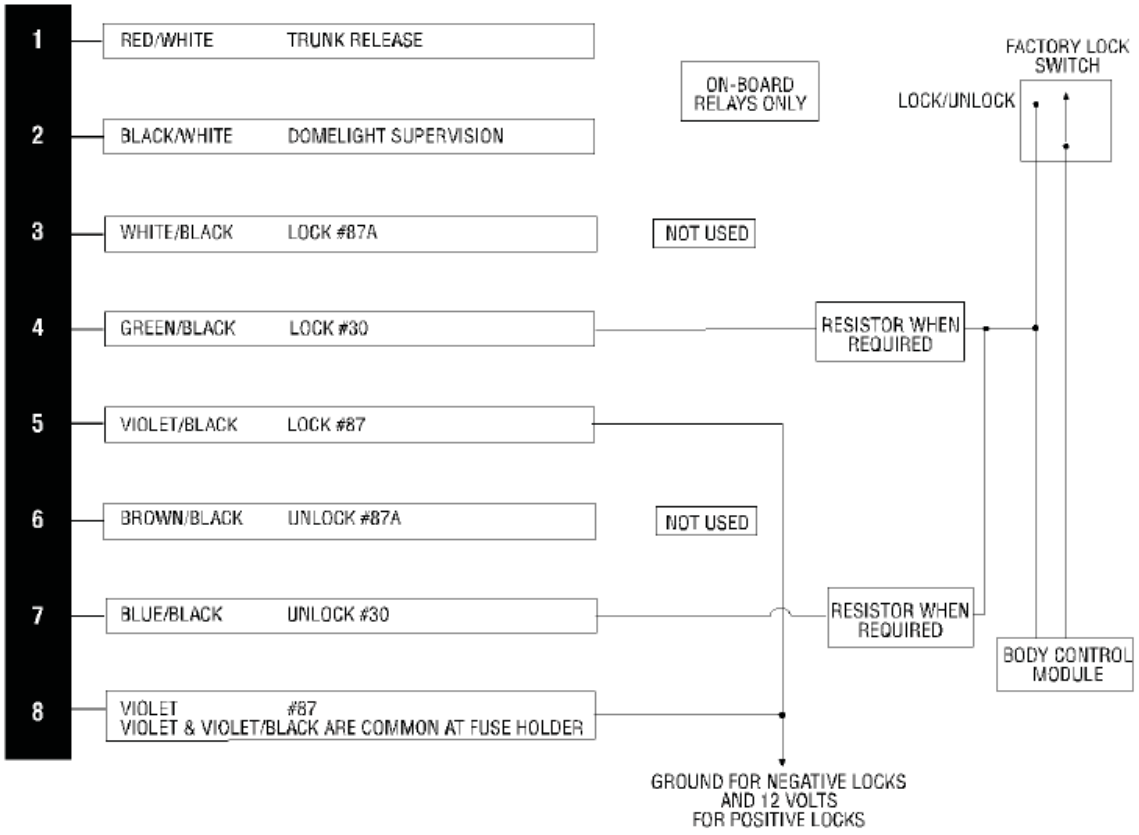
Test Procedure for Multiplexed Door Lock Systems:
1. Locate the Lock/Unlock wire in the vehicle.
2. Cut the wire in half and determine the polarity of the wire.
3. Using a digital multimeter, measure the resistance for Lock and Unlock. (See Diagram)

Test Configuration for Positive Door Lock Systems

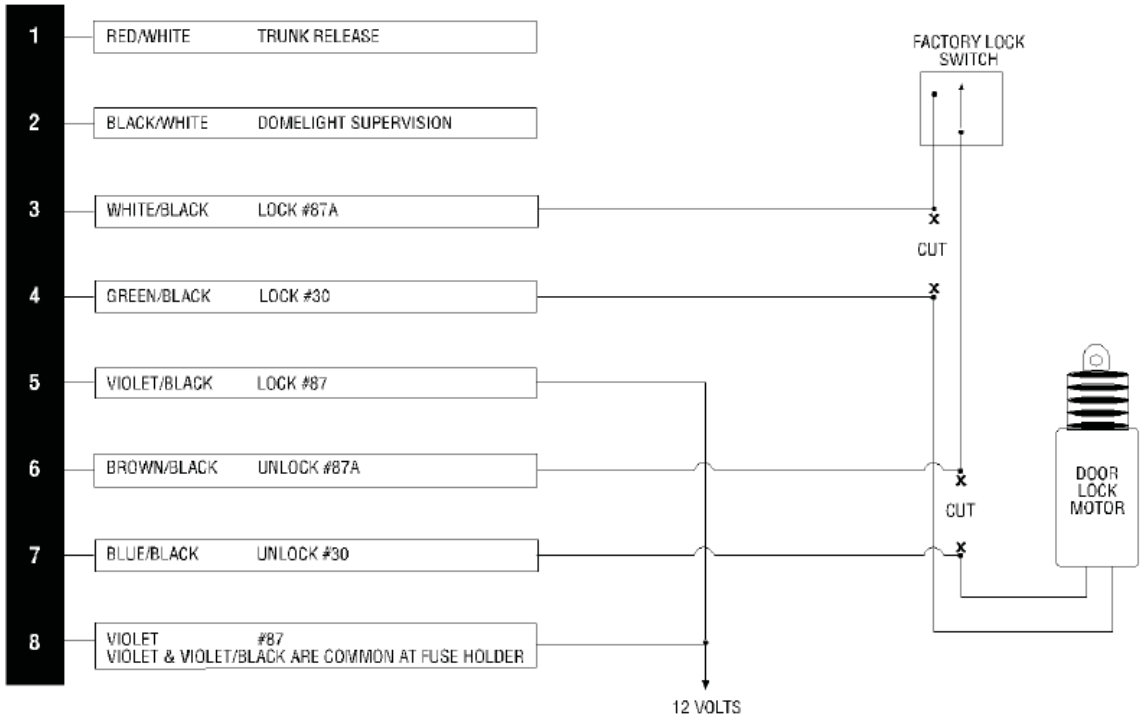


UNGO – Door Lock Application Guide

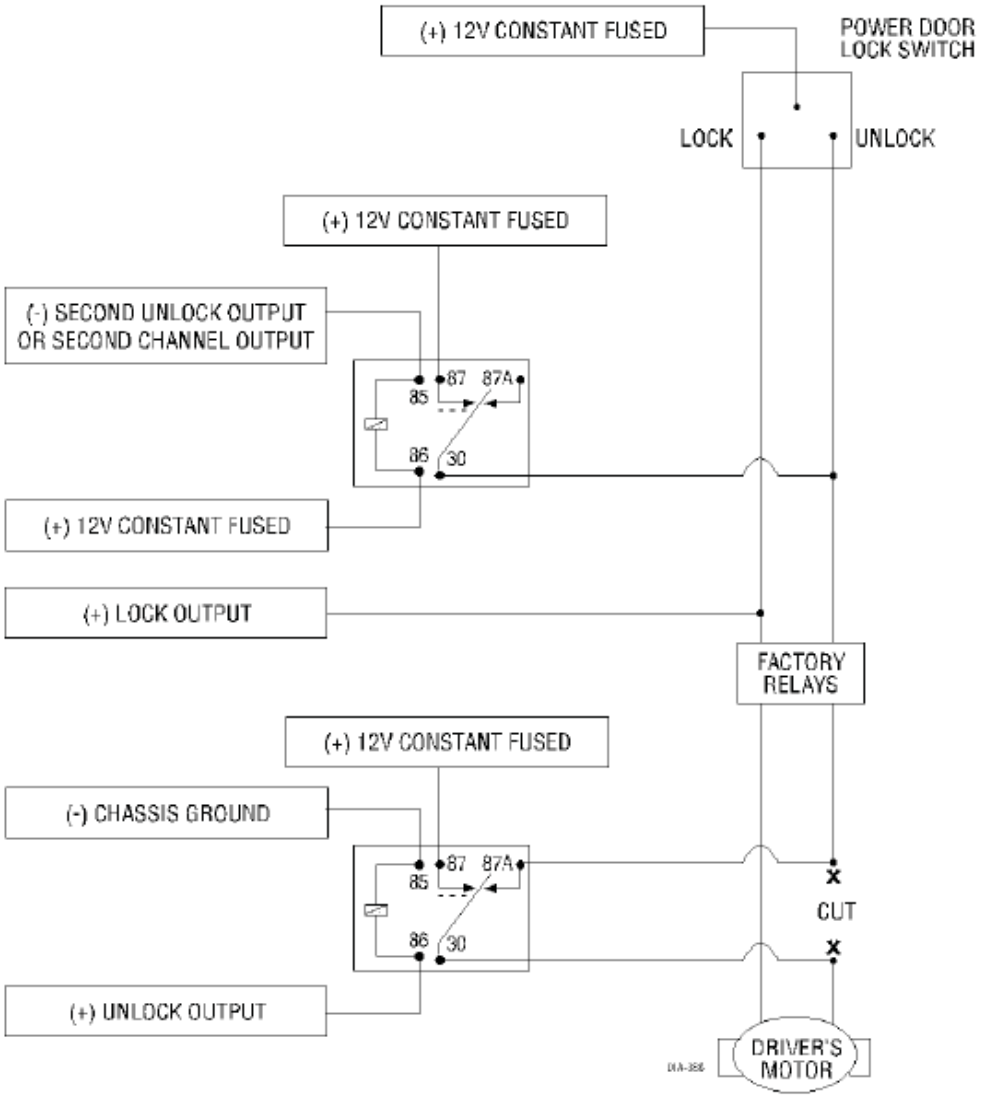
Multiplexed Door Lock Systems with On-Board Relays



Reverse Polarity Door Lock Systems with On-Board Relays:

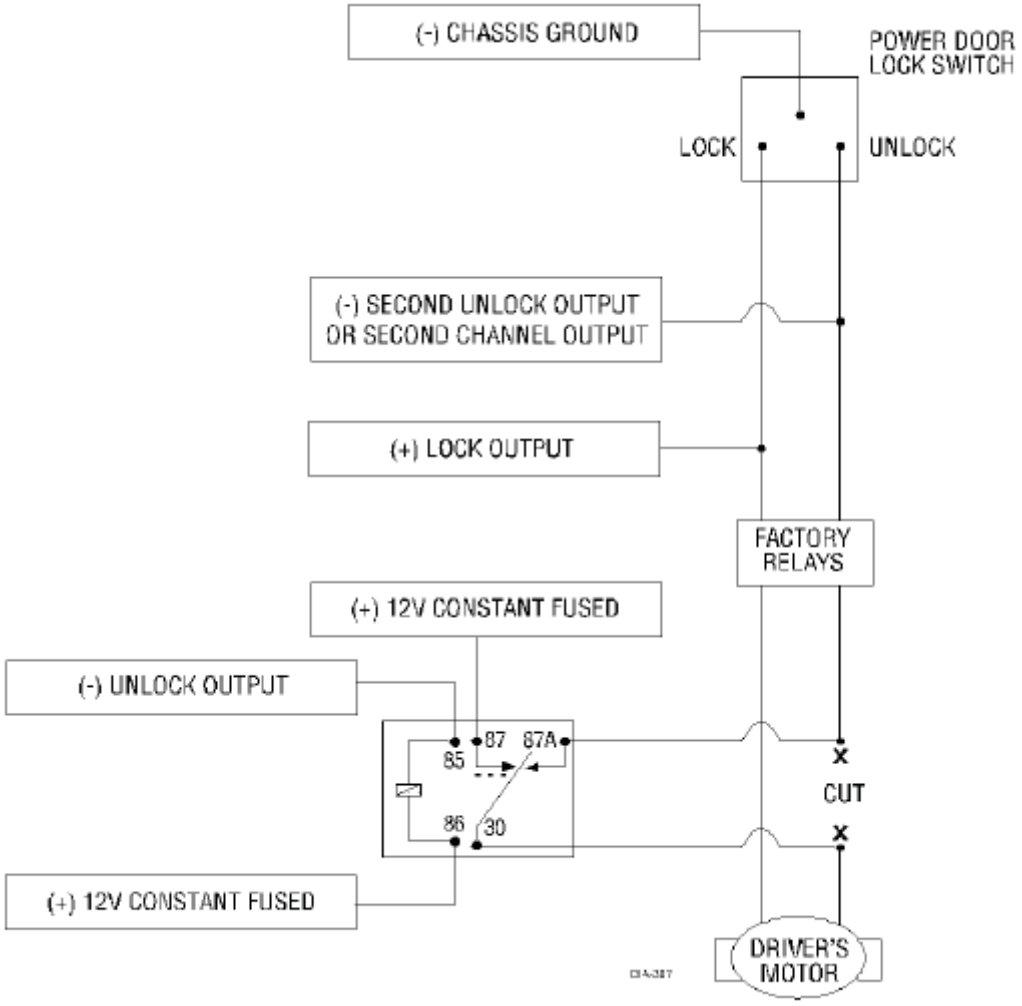


Progressive Door Lock Using Positive Door Lock Trigger



NOTE: *The second unlock output is a* ***(-)*** *output from the security/keyless entry system.*

Progressive Door Lock Using Negative Door Lock Trigger



NOTE: *The second unlock output is a* ***(-)*** *output from the security/keyless entry system.*

Technical Information Module Programming: Models: K10, K20, S670, RS10
System features can also be changed by using the ProSecurity Programmer

To enter the learn routine:

1. **Key.** Turn the ignition on and then back off.

2. **Choose.** Within 10 seconds, press and release the Override switch the number of times corresponding to the feature number you want to program. (See Feature Menus.) Once the Override switch has been pressed and released the desired number of times, press it once more and hold it. After a second, the LED will flash and the horn will honk to indicate which feature you have accessed.

3. **Transmit.** The transmitter is used to select the desired setting. As shipped, the unit is configured to the LED ON settings. These are the default settings. Pressing the lock button will set it to the LED ON setting. The LED will light solid (stop flashing) to indicate the setting. The horn will honk once (if connected). Pressing the unlock button will change the setting to the LED OFF setting. The LED will go out indicating the change and the horn will honk twice (if connected).

4. **Release.** The Override switch can now be released.

For example, to program the arming mode from active to passive, within 10 seconds of turning the ignition off, and press and release the Override switch once. Then press it again and hold it. The LED will flash in groups of one and the horn will honk once (if connected). While holding the Override switch, press the unlock button. The LED will stop flashing and go out. The horn will honk twice if connected. Passive arming is now programmed. If that was not the desired setting, without releasing the Override switch, press the lock button. The LED will light solid and the horn will honk once if connected. Active arming is now programmed. Release the Override switch after the selection has been made.

You can advance from feature to feature by pressing and releasing the Override switch the number of times necessary to get from the feature you just programmed to the feature you wish to access. For example, if you just programmed Feature 2 and you next want to program Feature 3 to off, release the Override switch. Press and release it once to advance from Feature 2 to Feature 3. Then press it once more and hold it. The LED will flash in groups of three and the horn will honk three times (if connected) to confirm that you have accessed Feature 3.

UNGO – Programming Guide

Technical Information Module Programming: Models: S100, S400, S660, SR1000, SR5000, SR6000
System features can also be changed by using the ProSecurity Programmer

To program the features using the Valet switch:

1. Open a door. (The GREEN wire, H1/5, or the VIOLET, H1/7 must be connected.)

2. Key. Turn the ignition on and then back off.

3. Select Menu. Press and HOLD the Valet®/Program switch. When the LED flashes once and the siren chirps, Menu One has been selected. Continue to hold the switch until the LED flashes twice and the siren chirps twice, Menu Two has now been selected. Continue to hold the switch until the LED flashes three times and the siren chirps three times, Menu Three has now been selected. Release the switch after the Menu choice has been selected.

4. Choose. Within 10 seconds, press and release the Valet®/Program switch the number of times corresponding to the feature number you want to program and then press and hold the switch. (See *Feature Menus*.)

After a second, the LED will flash to indicate which feature you have accessed. For example, in Menu Two, groups of eight flashes would indicate access to the activation pulse setting (Feature 2-8). The horn will also honk eight times (if connected).

5. Transmit. The transmitter is used to select the desired setting. Pressing will change the feature to the LED ON setting (or will flash once for features with more than 2 settings). The sire will chirp once (if connected). Pressing will change the setting to the LED OFF setting (or will flash two or more times for features with more than 2 settings).

6. Release. The Valet®/Program switch can now be released.

You can advance from feature to feature by pressing and releasing the Valet®/Program switch the number of times necessary to get from the feature you just programmed to the feature you wish to access. For example, in Menu One, if you just programmed Feature 1-2 and you next want to program Feature 1-3 to off, release the Valet/Program switch. Press and release it once to advance from Feature 1-2 to Feature 1-3. Then press it once more and HOLD it. The LED will flash in groups of 3 and the horn will honk 3 times (if connected) to confirm that you have accessed Feature 1-3.

Car Audio Reference Guide

Special Thanks to the Mobile Dynamics Toronto Campus for their assistance in the creation of this portion of the Clarion Application Guide

Car Audio Reference Guide

This section of the 2008 Clarion Application Guide provides some basic guidelines, tips and tricks related to the installation and design of a car audio system. This section in no way replaces proper training, certification, mentorship and experience.

Tools

Clarion recommends that high quality tools be used at all times. The use of quality tools helps to ensure proper engagement with fasteners, a reduced chance of stripping, rounding over or damage to the vehicle. This applies to socket sets, screwdrivers, crimpers, pliers, wrenches, wire strippers and so forth.

Clarion recommends that only a high quality Digital Multimeter be used for testing ALL electrical circuits. Test lights can cause damage to automotive computer systems, resulting in expensive repairs.

When you are installing a mobile security, convenience or remote start system, you commonly have to probe many wires. A tool that makes this very easy is the Power Probe II. It will indicate both 12V or Ground both with an LED and an audible tone - meaning you don't need to 'read' a display. It will also provide power and ground at the test probe tip - ideal for testing door locks and other electrical components.

Clarion strongly recommends that all electrical connections be soldered. A properly performed solder connection will start with a good solid mechanical connection - ie: The wires should already have a strong mechanical connections - typically twisted together. Once the mechanical connection has been established, then the connection can be heated thoroughly with the soldering iron and solder flowed into the connection. Soldering provides an airtight connection that helps to prevent corrosion. Once the solder connection is complete and has cooled, wrap the connection tightly with good quality electrical tape. Clarion recommends 3M vinyl tape.

An alternative, though less reliable than soldering is the use of high quality, properly sized butt connectors and a good quality crimping tool. Clarion recommends the Klein 1005 or equivalent crimping tool.

Clarion does not recommend the 'twist and tape' method of making electrical connections.

With the increasing use of data connections in the car, an the need to interface with Vehicle Speed Sensor (VSS) wires for Navigation System installations, Clarion recommends that all installation facilities have at least one portable oscilloscope available. An oscilloscope will dispplay voltage waveforms on its screen relative to a fixed time base. The oscilloscope can also be used to set amplifier gains to prevent clipping and distortion through the audio signal path.

Vehicle preparation and precaution

Before beginning work on a vehicle, inspect it thoroughly for pre-existing damage or non-functioning circuitry. Show the customer any problems BEFORE you begin work on the vehicle. Clarion recommends the use of a work order form for each vehicle that has a vehicle diagram on the rear of the form. The installer can indicate any pre-installation conditions and have the customer initial/sign the form.

If you will be required to disconnect the battery, ensure that you have the security code for the source unit - if applicable.

When working under the hood, use fender covers at all times to prevent damage. Use magnetic screw trays to hold nuts, bolts and screws, and store all tools on a cart next to the vehicle. Do not rest tools on the engine, cowl or fenders of the car.

When working inside the car use carpet and seat protectors. If you will be making electrical connections, protect the area below where you are working with a drop cloth capable of handling drops of solder.

When working with the door open installing a remote start (or similar), especially on expensive cars, protect the door sill with masking tape. This will help prevent scratches from occurring.

Car Audio Physics

Understanding some of the basic fundamentals of physics is required to comfortably sell and install car audio products.

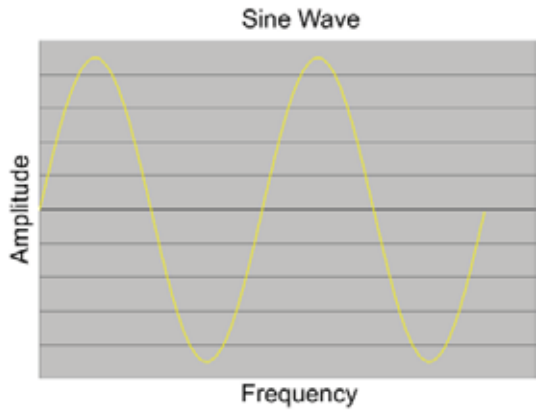
Sound

Sound is essentially changes in air pressure. These compressions and rarefactions cause minute bones inside our ears to vibrate, which our brains translate into perceived sound.

The image above shows an electrical representation of a spoken conversation. The high points represent high sound levels and low areas represent little or no sound.

Frequency

If you look at sound using an oscilloscope, you can see the voltage moving up and down relative to time. If you are listening to a pure tone - like the 'test tone' on your TV in the middle of the night, then waveform will look something like the graph below.



Period

The period is the amount of time between two identical points on a repeating waveform. We measure this in seconds or milliseconds. If you take the reciprocal of this number, you get frequency. For example - If you measure a period using a scope of 0.025 seconds, then take the reciprocal (1/0.025) you will see the frequency is 40Hz.

Amplitude

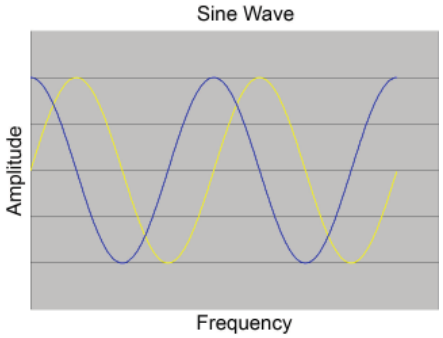
The Amplitude of a sound describes its intensity, loudness or strength. Later on we will explain the Decibel scale and how it relates to sound pressure measurement and observation.

Frequency Response

If you look at the sound coming from a speaker, you want all the different frequencies to be reproduced at the same level. This is known as the frequency response of a speaker. A frequency response graph, shows the output level (of a speaker, amplifier, source unit, etc). The X-axis represents the different frequencies measure and the Y-axis represents how strong the output is. Ideally, a speaker would produce all frequencies at exactly the same level, but due to the physical limitations of every speaker, this is not possible. The graph below shows the frequency response of a typical high-quality full-range speaker.

Phase

Phase refers to the relative arrival time of two signals or waveforms. Imagine two speakers playing the exactly same sound, set up in your living room. If you were to take one speaker and move it further away from you, the time it takes for the sound to arrive at your ears changes. This is known as a delay or phase shift. The graph below shows a phase shift between two sine waves.



The goal of a high quality car audio system is to accurately reproduce a musical performance. When sound is recorded in stereo (two channels), it is of the utmost importance that the sound coming from each channel arrives at the listeners ear simultaneously. This can be achieved through proper speaker placement, or compensated for by using time alignment or digital delays.

Octave

An Octave is a way of describing a doubling or halving of a frequency. If a 1,000Hz (1kHz) tone is being played, a tone one octave higher will be at 2.0 kHz. If the second tone were an octave lower, it would be at 500Hz (0.5 kHz).

Decibel

This is one of the most misunderstood terms in modern audio discussions. The BEL is the unit of measure used to describe sound intensity. It was first defined by Alexander Graham Bell. The Bel is an extremely large unit of measure, so the Decibel unit is more commonly used. 1 Decibel (dB) is equal to 0.1 Bel.

The Decibel was created in response to numerous tests on human hearing to describe sound intensities (volume).

1dB = The smallest perceivable change in intensity within the most sensitive range of human hearing (between 3 and 4 kHz)

3dB = The smallest perceivable difference in intensity at all frequencies.

10dB = A perceived doubling or halving of sound intensity

In terms of electrical signals, decibels can still be used to describe the difference between two voltages or amplitudes. This is quite convenient when talking about power coming from an amplifier, since each time we want to increase the perceived output from a speaker system by 3dB, we need to double the power coming from an amp.

Example: A speaker has an efficiency rating of 88dB 1W/1M. This means that when this speaker is installed in an infinite baffle (the wall of a very large room for example) and powered with 1 Watt of power, it will produce 88dB of sound. If we want to increase the output of this speaker to 91dB, we need 2 Watts of power from the amplifier. The following chart outlines the power required for this speaker to reproduce different sound levels:

Reference - 88dB 1W/1M

Output Level	Power (Watts)	Relative difference
118	1024	+30dB
115	512	+27dB
112	256	+24dB
109	128	+21dB
106	64	+18dB
103	32	+15dB
100	16	+12dB
97	8	+9dB
94	4	+6dB
91	2	+3dB
88	1	0dB
85	0.5	-3dB
82	0.25	-6dB
79	0.125	-9dB
76	0.0625	-12dB
73	0.03125	-15dB
70	0.015625	-18dB
67	0.0078125	-21dB
64	0.00390625	-24dB
61	0.001953125	-27dB
58	0.000976563	-30dB

You can see that the power being produced by an amplifier needs to vary over an enormous range to reproduce music at different listening levels. You can also see that significant amounts of power are required to reproduce realistic listening levels, which is why high quality car audio amplifiers are very important.

Limits of Sound

How loud a speaker can play depends on two important criteria.

1 - How much power a speaker can handle.
2 - How far the speaker cone can move.

Thermal power handling is determined primarily by the physical size of the voice coil assembly, and by the materials used to construct the voice coil. An inexpensive speaker may use a cardboard voice coil former with very thin copper wire with only one winding layer. if a great deal of power is sent to the speaker, the voice coil will heat up quickly and become damaged. Conversely, a large diameter voice coil, wound on an aluminum former (for example) with four layers of copper can clearly withstand more heat.

Thermal power handling can also be affected by the design of the components surrounding the voice coil. SET (Spider Exhaust Technology) allows air flow in and around the voice coil assembly to help remove heat. A tighter gap between the voice coil and the top plate also helps to transfer heat away from the voice coil and reduce termperatures. And finally, a vented pole piece allows airflow around the inside of the voice coil for cooling from the inside.

Physical power handling is determined by the physical dimensions and capabilities of the components used to construct a loudspeaker. The spider and surround (suspension components) control cone motion (and center the cone in the voice coil gap). These are often chosen carefully to be the limiting factor in excursion capability so that physical damage doesn't occur due to over-excursion. Most often, if the suspension is not stiff enough, the voice coil former will run into the bottom plate as the speaker moves rearward.

Physical power handling is controlled through proper enclosure design and by sending the proper signals to the speaker.

Small speakers should not be sent large amounts of low frequency information - you wouldn't expect a subwoofer to try and reproduct bass in

your car. A crossover (active of passive) should be used to limit low frequencies sent to small drivers.

In the case of a subwoofer enclosure, there are two factors that will determine power handling. In both sealed and vented enclosures, the size of the enclosure has a great effect on the physical power handling. A larger enclosure offers a 'softer' air spring to resist the motion of the cone.

In a vented enclosure, the driver "see's" the enclosure as being nearly infinitely large below the tuning frequency. It is of the utmost importance that the tuning frequency be low enough to control cone motion. Clarion recommends the use of a subsonic filter when a vented enclosure is used with a high (>35Hz) tuning frequency to prevent speaker damage.

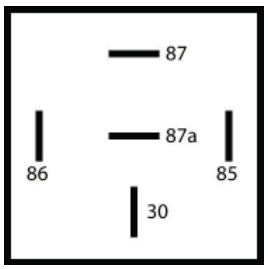
Relays

The ability to switch high current electrical circuits using low current control systems has made the use of relays extremely popular. Relays can also be used to perform relatively elaborate processes - including conversion from positive to negative pulsing, negative to positive pulsing, momentary to constant pulsing, retained accessory circuits and so forth. This section will look at the basic connections on a relay and some of the most basic circuits. A few minutes of searching on the Internet will reveal some of the more complex circuits available.

Relay Connections

The most popular (and recommended) relays are available from Bosch and Potter and Brumfeld. These SPDT (Single Pole Double Throw) relays can handle in excess of 20A of current while only requiring 200mA (0.2 A) to energize the circuit.

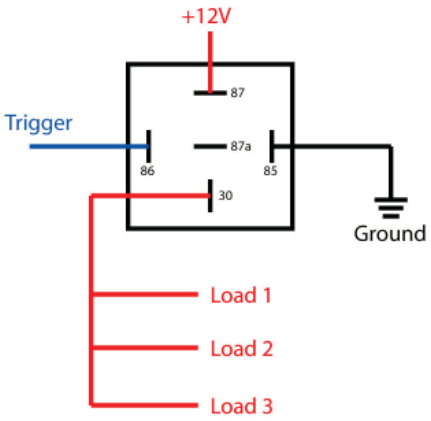
This diagram shows the pin locations and labels on the bottom of a relay.



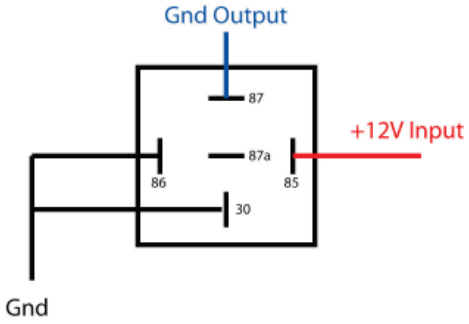
Pin	Function
30	Common Connection
87	Normally Open Connection
87a	Normally Closed Connection
85	Coil
86	Coil

Relay Circuits

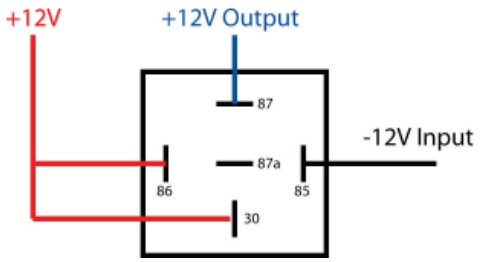
This circuit allows multiple loads to be switched from a single relay. This is convenient for using a single remote turn on wire from a source unit to turn on multiple amplifiers.



The following circuit will take a positive input (front a door trigger for example) and convert it to a negative output.



The following circuit will take a negative trigger (output from an alarm) and convert it to a positive output (to drive a light or fan for example).

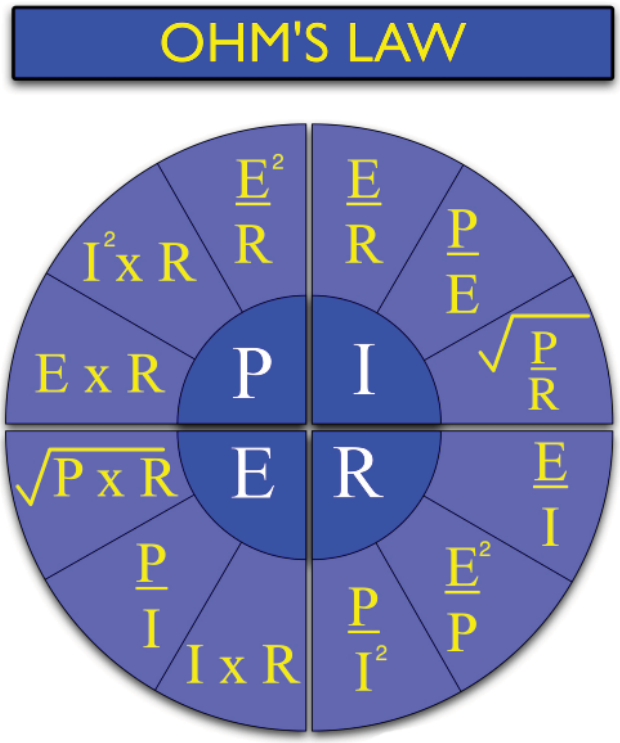


Common Car Audio Math

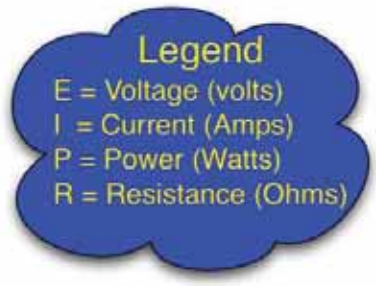
The following section provides a simple and easy to use reference for some of the more commonly utilized mathematical formulas in the car audio industry.

Ohm's Law

Ohm's Law was named after Georg Ohm, a mathematician and physicist, born in 1789 and lived to be 65 while living in Bavaria. Mr. Ohm created the foundation for the basic units of electricity which are now accepted as a standard worldwide. Ohm's Law describes the relationship between Power, Voltage, Current and Resistant in AC, DC and RF (Radio Frequency) circuits and is the foundation for all electronic circuit design.



The above chart provides all the common formulas related to Ohm's Law.



Voltage (measured in Volts) is a measurement of electrical potential between two points. One Volt is the potential difference required to move one Coulomb of charge between two points in a circuit while using one Joule of energy.

Current (measured in Amps) describes the rate of electron flow in a circuit. One amp is equivalent to the flow of one Coulomb (6.25x108 electrons) per second.

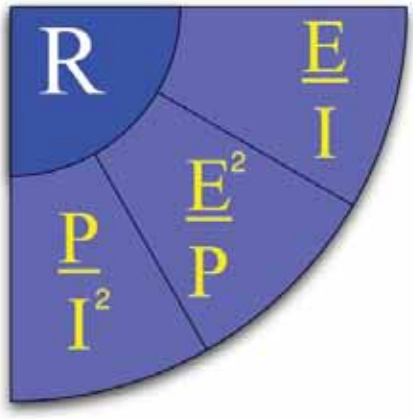
Resistance (measured in Ohms) is the unit of resistance to current flow. One Ohm of resistance will allow one Amp of current to pass when a potential of one Volt is applied to a circuit. The Greek letter Omega is universally used to describe Ohms.

Power (measured in Watts) is a measurement of electrical work being done. One Watt is equivalent to one Joule of energy being transferred or dissipated in one second.

Joules is the Metric unit of energy (replaces Calorie) and is equivalent to the amount of work needed to apply a force of one Newton over a distance of 1 Meter. 1 Calorie = 4.184 Joules

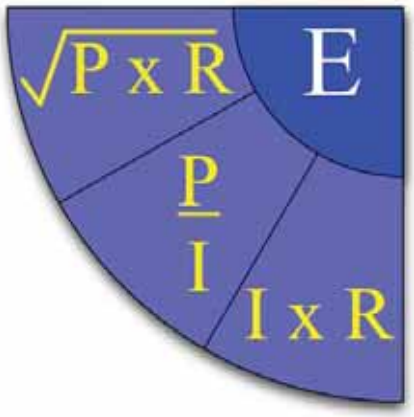
These units are used to describe the function of any electrical circuit. Using the Ohm's Law wheel on the left side of this page, you can calculate any third unit when you know two of them.

Resistance Formula Calculations



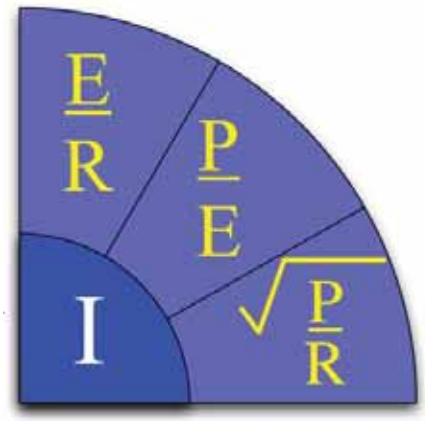
How to read the Ohm's Law wheel
Resistance = Voltage / Current
Resistance = Voltage^2 / Power
Resistance = Power / Current^2

Example:
If you know a circuit has a voltage potential of 12 Volts and 6 Amps of current is passing through it, then you can calculate the resistance in that circuit: 12 ÷ 6 = 2. The circuit has a resistance of 2 Ohms.



Voltage Formula Calculations

Example:
If you know a device (a resistor for example) has 2A of current being passed through it and has a resistance of 10 Ohms, then the voltage drop across the resistor will be: 2 x 10 = 20V

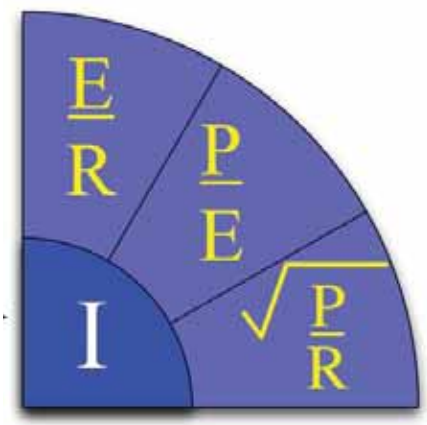


Current Formula Calculations

Example:
If you know a device is dissipating 100W of energy and has a resistance of 4 Ohms, you can calculate the current being passed through the device: √(100 ÷ 4) = 5 Amps

Power Formula Calculations

Example:
If you know a device is dissipating 100W of power and 12V is being applied to the device, you can calculate the current passing through the device: 100 ÷ 12 = 8.33A



Resistance Circuit Calculations
There are two ways of connecting devices (or loads) together - series and parallel.

Series Circuits
When multiple devices are wired in Series then use the following formula:

Rtotal = R1 + R2 + R3 + R...
The total resistance is the sum of each resistance.

Example:
A circuit with four 2-Ohm loads wired in Series has a total resistance of: 2 + 2 + 2 + 2 = 8 Ohms

Parallel Circuits
When multiple resistive devices are wired in parallel, the formula is slightly more complex:

1/Rtotal = 1/R1 + 1/R2 + 1/R3 + 1/R...

This is know as calculating the sum of reciprocal resistances.

Example:
A circuit with four 8-Ohm loads wired in parallel has a total resistance of:
1 / ((1/8)+(1/8)+(1/8)+(1/8) = 2 Ohms

Circuit wiring Descriptions
So how do you wire a device (most commonly a speaker) in series or parallel? The drawings below described each method.

Series
The example above shows a Dual Voice Coil subwoofer with both voice coils wired in series.

If this were a PXW1051 with dual 2 Ohm voice coils, the net load would be 4 Ohms. If this was a PXW1051, with dual 4 Ohm voice coils, the net load would be 8 Ohms.

Parallel

The example above shows a Dual Voice Coil subwoofer with both voice coils wired in parallel. The two positive connections are both connected to the positive terminal of the amplifier and both negative connections are connected to the negative terminal of the amplifier. If this were a PXW1051 with dual 2 Ohm voice coils, the load would be 1 Ohm, if this was a PXW1052 with duial 4 Ohm voice coils the net load would be 2 Ohms.

Series Parallel Circuits

This example is more complex. When multiple drivers are in use, you can wire each driver using series or parallel, then wire the set of drivers in either series or parallel. When multiple drivers are being used, Clarion recommends wiring each speaker in series with the other. In the unlikely event of a speaker failure, this provides the most protection against further damage.

In this example, if we are using two PXW1051 subwoofers, the net load would be 2 Ohms. If these were PXW1052 subwoofer, the load would be 4 Ohms.

Passive Crossovers

When connecting multiple speakers to an amplifier, passive crossover components are often required to filter the signal going to each speaker. For example, if you connect a midrange and a tweeter, you don't want bass to go to the tweeter and you don't want highs to go to the midrange. Similarly, if you bridge a woofer to a two channel amp and a set of full-range speakers, you only want bass to be heard from the woofer and only mids and highs from the full-range speakers. This section will describe how to calculate the appropriate component (capacitor or inductor) values to build these systems.

Nomenclature

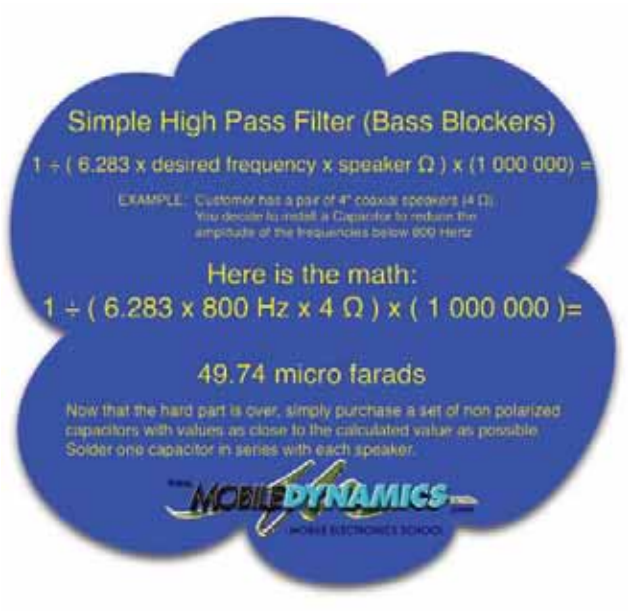
Capacitors have two ratings - a capacitance value and a voltage. The amount of energy storage in a capacitor is measured in Farads. Since the Farad is a very large unit, most capacitors, especially those used in filter circuits are measured in 1 millionth of a farad, or a microfarad. The greek letter mu (μ) is used to describe micro:

1μF = 1/1,000,000 of a Farad and is pronounced 1 microFarad.

Common values for filter capacitors range between 1μF and 250μF.

1mH = 1/1000 of a Henry and is pronounced 1 milliHenry.

Inductors are rated in Henries. Again, this is a very large unit of measurement, and in filter networks, we use 1 thousanth of a Henry or a milliHenry.

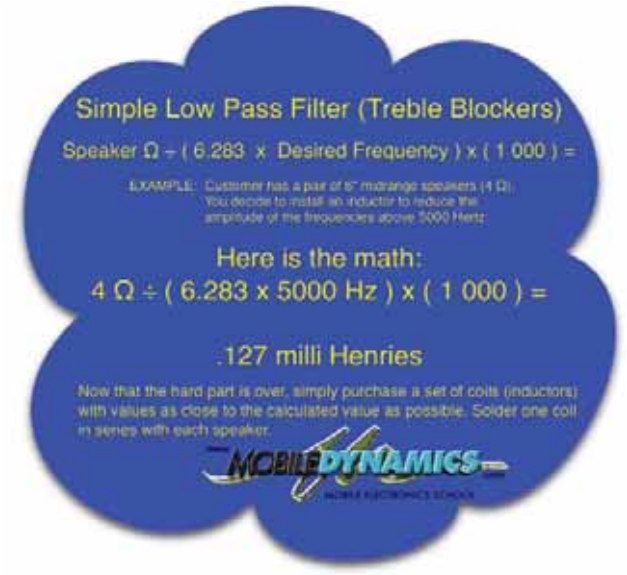

Simple High Pass Filter (Bass Blockers)
1 ÷ (6.283 x desired frequency x speaker Ω) x (1 000 000) =
EXAMPLE: Customer has a pair of 4" coaxial speakers (4 Ω).
You decide to install a Capacitor to reduce the
amplitude of the frequencies below 800 Hertz
Here is the math:
1 ÷ (6.283 x 800 Hz x 4 Ω) x (1 000 000)=
49.74 micro farads
Now that the hard part is over, simply purchase a set of non polarized
capacitors with values as close to the calculated value as possible.
Solder one capacitor in series with each speaker.
MOBILE DYNAMICS

High-Pass filters

A high-pass filter allows only frequencies higher than the selected crossover point to pass through the circuit. We use non-polarized capacitors wired in series with the load to create these filter networks. The equation above outlines how to calculate the correct component value. The chart below outlines common capacitor values for common speakers sizes in a 4 Ohm impednace. Load impedance is ciritcally important to passive crossover component value. If you change the impedance, you need to recalculate the component value.

Speaker Size	Capacitor
6x9, 6x8	250-300 μF
6.5, 5x7	200 μF
5.25	150 μF
4, 4x6	100 μF
3.5	47μF
Tweeter	2.7-3.3μF

Low-Pass filter


Simple Low Pass Filter (Treble Blockers)
Speaker Ω ÷ (6.283 x Desired Frequency) x (1 000) =
EXAMPLE: Customer has a pair of 6" midrange speakers (4 Ω).
You decide to install an inductor to reduce the amplitude of the frequencies above 5000 Hertz
Here is the math:
4 Ω ÷ (6.283 x 5000 Hz) x (1 000) =
.127 milli Henries
Now that the hard part is over, simply purchase a set of coils (inductors) with values as close to the calculated value as possible. Solder one coil in series with each speaker.
MOBILE DYNAMICS

Not surprisingly, a low-pass filter allows only those frequencies below the selected crossover point to pass un-attenuated. Low-Pass filters are typically used with subwoofers, as you don't want mids and highs to be reproduced.

In car audio, we use an inductor (also called a choke) as a low-pass filter. The formula above allows you to calculate the appropriate inductor value. For most single 4 Ohm subwoofers, a 6.0 or 6.6mH inductor works well.

Passive Crossover Wiring - Mixed mode

Combinations of high- and low-pass filters can be combined amongst different speakers. This is commonly used when wiring mixed-mode systems. The illustration below shows the wiring drawing for a pair of 6x9 speakers and a subwoofer on a single two channel amplifier. The subwoofer would be connected to the bridged terminals and the 6x9s would be wired in stereo. Using the crossover information provided previously, we would use a 250uF capacitor on each 6x9 and a 6.6mH inductor on the subwoofer.

In application, wether the passive component is installed on the positive wire or the negative, it will have no effect on the performance of the circuit. However, it is common to wire all speakers in the same fashion for simplicity and to make troubleshooting and adjustments later on.

Subwoofer Enclosure Guide

Even the most expensive, complex subwoofer on the planet won't sound good unless it is installed in a properly designed and constructed enclosure. The following section outlines subwoofer enclosure design and construction guidelines.

Construction Notes

All enclosure should be constructed of 3/4" thickness North American-produced MDF or high-quality plywood with one finished side (installed facing the inside of the enclosure). The use of particle board will result in substandard performance and could potentially lead to premature speaker failure.

• All enclosure joints must be secured with screws or nails.

• Wood glue (or equivalent) must be used along the edges of all joints.

• All panel joints should be sealed with appropriate caulking material - latex or rope caulk. Do not use Silicone sealant - the gases that are released during the curing process may be harmful to the adhesives used to assemble a subwoofer.

• Large panels should be reinforced with an internal brace to reduce panel flexing due to the pressures created inside the speaker cabinet. Likewise, around the mounting face of the subwoofer, braces should run from the front panel to the rear panel of the enclosure to further strengthen it.

• Clarion does not recommend the use of passive crossover components with our subwoofers (Inductors or Chokes). We recommend that a dedicated subwoofer amplifier with an integrated electronic crossover be used to achieve maximum performance from the sub-bass system.

• Where applicable, Clarion recommends the use of a subsonic filter in ported enclosure applications.

• When calculating enclosure volumes, please remember to include the volume of the subwoofer, the vent(s) and/or brace(s) in your calculations.

• For optimal performance from your subwoofer enclosure, the ideal ratio of Width to Height to Depth should ideally match the Greek Golden Rectangle ratio of W=1.0, D=0.618 and H=1.618. This ratio of dimensions results in a reduction of standing waves inside the enclosure and the best possible sonic performance.

• Where applicable, the inside and outside edge of all vents should be rounded over (radiussed) to smooth airflow over the edge of the vent. This can be done with a router and a round-over bit. The use of Aeroports (or equivalent) also works very well.

Subwoofer Enclosure Application Chart

There are many different styles of subwoofer enclosures - sealed, vented, bandpass, transmission line, aperiodic, isobaric and multi-chamber vented - just to name a few.

Each enclosure has different strengths, characteristics and weaknesses. The chart below provides a generalised overview of the differences between some of the most common enclosures. Clarion recommends the use of Sealed (Acoustic Suspension) or Vented (Bass Reflex) enclosure for our subwoofers. These enclosures are the easiest to design, offers the best dynamic and transient response characteristics and is the most tolerance of design and construction errors - bottom line, they always sound great!

Enclosure Type	Sealed	Vented	Bandpass
Power Handling	Good at all Frequencies	Good above Tuning Frequency	Good near Tuning Frequency
Linearity	Excellent	Good	Poor
Dynamic Performance	Excellent	Good	Poor
Efficiency	Good	Very Good	Excellent
Subsonic Output	Excellent	Good	Good
Midbass Output	Excellent	Very Good	Poor
Enclosure Size	Small	Medium	Large

Subwoofer Enclosure Calculations

Clarion offers an extensive line of high quality, product specific subwoofer enclosures. Clarion dealers will, on occasion, be called upon to custom build a subwoofer enclosure from scratch to better maximise the space inside a vehicle, provide room for additional speakers, integrate an elaborate amp rack or to perform a completely custom installed. The following instructions outline the steps required to design a custom-sized subwoofer enclosure.

Step 1: Measurements

The first step is to take careful measurements of the vehicle in which you want to build the enclosure. You must measure the maximum width, height and depth, taking into consideration the ability to install the enclosure into the vehicle through the trunk/hatch opening. Also consider bracketry, seatbelt enclosure and other obstacles in the trunk.

Example:
Trunk Width: 35.0 inches
Trunk Height: 14 Inches
Desired Max Depth: 11 Inches
The Maximum desired depth and/or the trunk opening will determine just how big the enclosure can be. You can always make it smaller.

Step 2: Rough Calculation

Now that you have some basic numbers, you can calculate the maximum possible enclosure volume. Clarion strongly suggests that 3/4" or thicker MDF or good quality 'one side good' plywood be used for all enclosures. In our example we will use 3/4" material.

Example:
Take each dimension and subtract the wood thickness:

Internal Width: 35.0 - (2 x 0.75) = 33.5
Internal Height: 14 - (2 x 0.75) = 12.5
Internal Depth: 11.0 - (2 x 0.75) = 9.5

Multiply these numbers together to come up with an internal volume:

33.5 x 12.5 x 9.5 = 3978.125 cubic inches

Divide by 1728 to convert this measurement into cubic feet:

3978.125 ÷ 1728 = 2.30 ft^3
This is the largest air volume (not including woofer, port or brace displacement you can use. You can now select the subwoofers you want based on this information.

Step 3: Subwoofer Selection

Clarion subwoofer spec sheets include several popular and highly effective enclosure designs. Using the volume calculated above, you can choose any driver or combination of drivers you want to occupy this space.

Example:
In our example, we have a maximum gross volume of 2.30 cubic feet. Looking through the Application Guide - we see that a few of our options are:

The PXW1252 requires a net volume of 1.7 cubic feet in a ported enclosure.

Two PXW1252 woofers require a net volume of 1.6 cubic feet in a sealed enclosure

Two PXW1052 require a net volume of 2.0 cubic feet in a ported enclosure.

Three PXW1052 subwoofers require a net volume of 1.5 cubic feet in a sealed enclosure.

One PXW1552 requires a net volume of 1.5 cubic feet in a sealed enclosure

We'll go with a pair of PXW1052 drivers in a vented enclosure.

Step 4: Final Volume Calculations

Knowing the maximum width and height of the enclosure, so we can modify the depth of the enclosure to create the perfect net internal volume.

Example - Vent Volume
The vent volume calculation goes as follows:
The spec sheet outlines the need for two vents, each with an internal diameter of 2.5 inches each with a length of 8.25 inches. To calculate the volume of each vent, we need to determine how much space those vents will occupy in the enclosure:

Area of a circle formula: Pi x R^2 = 3.1416 x R x R
Where R is the radius of the outside of the vent. Most round vents are made of ABS plastic drainage pipe with a wall thickness of 0.125 - 0.25 inches. For a 2.5" pipe, the outside diameter would be approximately 2.75 inches.
Part of the vent extends through the face of the enclosure, so we can subtract the thickness of the front panel of the enclosure from the volume calculation.

3.1416 x 1.375 x 1.375 x (8.25 - 0.75) = 44.546 cubic inches.

We have two vents, so we double that volume:

44.546 x 2 = 89.09 cubic inches
Then convert back to cubic feet:
88.03 ÷ 1728 = 0.05 cubic feet.

Example - Total Volume
We need to add the air volume required to the displacement of any objects inside the enclosure.

Here are the items we need to consider:

Net Air volume: 2.0 cubic feet
Driver displacement: 0.12 cubic feet each
Vent Displacement: 0.05 cubic feet total

Total air volume = 2.0 + 0.12 + 0.12 + 0.05 = 2.29 cubic feet.

For this example, the dimensions are within 1% of the target volume, and we can use the 35 x 14 x 11 dimensions.

Step 4a: Alternate Volume Calculations
If we needed a smaller volume, let's say 1.5 cubic feet gross air space, then the enclosure dimension calculation would go as follows:

Convert cubic feet to cubic inches:
1.5 x 1728 = 2592 cubic inches.

Divide by internal height:
2592 ÷ 12.5 = 207.36

Divide by internal width:
207.36 ÷ 33.5 = 6.189

6.189 is the internal depth of the enclosure. Add the thickness of the front and rear panels and you have the outside depth of the enclosure:

6.189 + 0.75 + 0.75 = 7.689

You may need to massage the width or height dimensions of the enclosure to provide adequate mounting depth and port clearance for your design. You can alter any dimension necessary to achieve the desired result.

Amplifier Installation

When installing an amplifier in a modern vehicle, careful consideration needs to be paid to power wire connections. High power amplifiers can easily consume significant amounts of current - easily exceeding 100A+ of current.

Wiring Protection

It is paramount that any power wire run through the car, be it a large gauge cable to power and amplifier or a small wire to power an accessory such as an overhead monitor, be fused.

Imagine the following scenario - a large audio system is installed in a vehicle - a 1/0 AWG power cable is run from the battery to a distribution block at the rear of the car. The car gets into an accident - it is T-Boned on the side of the car the power wire runs down. The impact pinches the power, shorting it directly to ground. This could result in the battery exploding or at least, wires melting and catching fire.

Clarion recommends the use of an ANL or AGU fuse holder on all power wires. When connecting any cable to the battery, a fuse must be installed within 8 inches of the battery terminal. Clarion does not recommend the use of circuit breakers. Their failure mode (what happens when the device does not operate as intended) does not guarantee that the circuit will be protected in the event of a short circuit.

Power Cable Sizing

Proper power wire sizing is paramount in allowing an amplifier to make its rated power. The chart below outlines the power cable requirements to a single amplifier.

Ground Connections

When installing an amplifier, it is paramount that the ground connection and path back to the battery and alternator be capable of handling even more current than the audio system will utilize. The reason is that the factory electrical system (lights, fans, computers, sensors, ignition system, etc) is already using these connections to operate the vehicle. Any cable you add to the positive circuitry, will need to be added to the ground path at the same time. The most important of which is the cable running from the negative terminal of the battery to the chassis.

On many new vehicles, the body and chassis panels are not welded together, but instead glued using high strength epoxies. These connections will not pass current - making the chassis of the car unsuitable for grounding an amplifier. Clarion strongly recommends running a cable of equal size to that of the power wire to the negative terminal of the amplifier. This ground wire must also be grounded at the rear of the vehicle.

If you run a 4 AWG power cable to an amplifier, run a 4 AWG ground cable at the same time. This will allow for significantly increased current carrying capacity, result in less voltage drop and allow your amplifiers to produce more power.

Cable size by Power and Distance

RMS Watts	4 Feet	8 Feet	12 feet	16 Feet	20 Feet
100	10 AWG	10 AWG	8 AWG	8 AWG	4 AWG
200	10 AWG	8 AWG	8 AWG	4 AWG	4 AWG
400	8 AWG	8 AWG	4 AWG	4 AWG	4 AWG
600	8 AWG	4 AWG	4 AWG	4 AWG	4 AWG
800	4 AWG	4 AWG	4 AWG	2 AWG	2 AWG
1000	4 AWG	4 AWG	2 AWG	2 AWG	2 AWG
1500	4 AWG	2 AWG	2 AWG	1/0 AWG	1/0 AWG